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CIRCULATING BLOOD VOLUME CHANGES INCIDENT TO MAJOR ORTHOPEDIC SURGERY

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Changes in blood volume during major surgery were studied in 37 patients. In each, the blood volume was determined first after induction of anesthesia and again after closure of the skin incision. The method depended on the intravenous injection of a precisely measured amount of radioiodinated serum albumin and the determination of the resultant intensity of radioactivity in the circulating blood. The reliability of the method was determined by a test-retest procedure in three volunteer subjects. The results, corrected to take into account the blood given by transfusion during the operations, showed that major orthopedic surgery involves significant loss of blood. Transfusions were given to 32 patients, and among these there were 5 in whom the deficit of blood would have amounted to more than 1,000 cc., had they not received transfusions. The use of radioactive elements to measure blood volume helps in estimating transfusion needs.

THE DEVELOPMENT of radioactive isotope dilution techniques for determination of blood and plasma volume has made possible the serial or repeated determination of circulating blood volume in humans with reasonable accuracy and ease.[1] Clinical medicine and surgery is thus provided with another means of measurement of one of the factors vital to the patient's general well-being. The objective of this study is to determine those changes which occur in the circulating blood volume in individuals who undergo the common major orthopedic procedures associated with significant blood loss.

In this study, immediate preoperative and postoperative circulating blood volume determinations were done on 37 patients who were subjected to major orthopedic procedures. These procedures were selected as representative of routine major orthopedic surgical practice. The operation was, in each instance, done by a fully qualified orthopedic surgeon. Routine anesthetic techniques were utilized. Transfusions were given as indicated clinically, and the exact volume of whole blood transfused in the interval between blood volume determinations was carefully recorded. It is assumed that the major factor responsible for the

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TABLE 2.—*Blood Volume Determinations in Surgical Patients, Grouped According to Surgical Procedure*

Case	Procedure	Age, Yr.	Sex	Blood Volume: 1st Determination, Cc.	Blood Volume: 2nd Determination, Cc.	Change: Cc.	Change: %	Transfusion, Cc.	Total Uncompensated Blood Volume Change: Cc.	Total Uncompensated Blood Volume Change: %
Fresh Fracture About Hip and Proximal Femur										
1	Closed reduction, intertrochanteric fracture, left femur; internal fixation with Smith-Petersen nail and plate	68	F	3,461	2,990	−471	−10.7	440	−991	−26.3
2	Closed reduction, intracapsular fracture, femoral neck, with blind hip nailing	84	F	4,167	4,009	−158	− 3.7	430	−588	−14.1
3	Closed reduction, intertrochanteric fracture, right femur; internal fixation with Smith-Petersen nail and attached plate	82	M	4,541	4,413	−128	− 2.8	723	−851	−18.7
4	Open reduction and internal fixation, subtrochanteric fracture, femur, with Smith-Petersen nail and plate	88	F	2,693	2,636	− 57	− 2.1	440	−497	−18.5
5	Closed reduction, intertrochanteric fracture, right femur; internal fixation with Smith-Petersen nail and attached plate	74	F	3,060	3,071	− 19	− 0.6	870	−889	−28.8
6	Closed reduction, intertrochanteric fracture, left femur; internal fixation with Smith-Petersen nail and attached plate	76	F	2,868	2,944	+ 76	+ 2.6	460	−384	−13.4
7	Closed reduction, intertrochanteric fracture, left femur; internal fixation with Smith-Petersen nail and attached plate	75	F	2,958	3,268	+310	+10.5	840	−530	−18.0
8	Closed reduction, intertrochanteric fracture, right femur; internal fixation with Smith-Petersen nail and attached plate	86	F	3,268	3,659	+391	+12.0	880	−489	−15.0
9	Closed reduction, intracapsular fracture, neck of the right femur; internal fixation with Smith-Petersen nail and attached plate*	87	M	4,347	5,298	+951	+21.2	440	+511	+12.0
Reconstructive Procedure About Hip										
10	Excision of femoral head and insertion of Eicher hip prosthesis through posterior (Gibson) approach	56	F	4,034	3,319	−715	−17.6	890	−1,605	−39.8
11	Cup arthroplasty through anterior iliofemoral approach	63	M	5,478	4,908	−570	−10.4	845	−1,415	−25.8
12	Cup arthroplasty, left hip, through anterior iliofemoral approach	38	M	5,099	4,915	−184	− 3.6	860	−1,044	−20.5
13	Arthrodesis, right hip, through anterior iliofemoral approach	10	F	2,645	2,448	−197	− 7.4	415	−612	−23.1
14	Excision of femoral head and insertion of Eicher hip prosthesis, right, through anterior iliofemoral approach	73	F	2,178	2,399	+221	+10.1	840	−619	−28.4
15	Arthrodesis, left hip, through anterior iliofemoral approach	14	M	2,674	2,979	+305	+11.4	880	−575	−21.5
Intervertebral Disk Excision Without Fusion										
16	Left partial lumbar hemilaminectomy and excision of protruded intervertebral disk L-3	42	M	7,498	7,124	−374	− 5.0	None	−374	− 5.0
17	Left partial hemilaminectomy and excision of intervertebral disk L-4	52	M	6,515	5,796	−719	−11.0	None	−719	−11.0
Combined Intervertebral Disk Exploration and Spine Fusion										
18	Exploration and excision, intervertebral disk, L-5; spine fusion L-5 to S-1	39	M	5,551	4,957	−594	−10.7	None	−594	−10.7
19	Exploration, intervertebral disk, L-4 and L-5; spine fusion L-4 to S-1	56	F	4,051	3,491	−560	−13.8	420	−980	−24.2
20	Exploration and excision of herniated intervertebral disk, L-5, and spine fusion L-5 to S-1	27	M	4,255	4,028	−227	− 5.3	440	−667	−15.7
21	Exploration, intervertebral disk, L-4; exploration and excision of disk, L-5; spine fusion L-5 to S-1	39	F	4,694	4,477	−217	− 4.6	440	−657	−14.0
22	Exploration, intervertebral disk, L-4 and L-5; excision of disk, L-4; spine fusion L-4 to S-1	37	M	5,623	5,538	− 85	− 1.5	None	− 85	− 1.5
23	Exploration and excision, intervertebral disk, L-4, and spine fusion L-4 to L-5	36	F	3,376	3,465	+ 89	+ 2.6	430	−341	−10.1
24	Exploration, intervertebral disk, L-4 and L-5, and spine fusion L-4 to L-5	35	M	4,333	4,470	+137	+ 3.2	420	−283	− 6.5
25	Exploration and excision, intervertebral disk, L-5, spine fusion L-5 to S-1	46	F	3,350	3,496	+146	+ 4.4	440	−294	− 8.8
26	Exploration, intervertebral disk, L-5, spine fusion L-4 to S-1	55	F	4,060	4,022	+532	+13.0	870	−338	− 8.3
27	Exploration, intervertebral disk, L-4 and L-5, spine fusion L-4 to sacrum*	29	M	5,514	6,598	+1,084	+19.7	890	+194	+ 3.5
Spine Fusion at Various Levels										
28	L-4 to S-1	37	F	4,585	4,025	−560	−12.2	430	−990	−21.6
29	L-5 to S-1	43	F	3,601	3,253	−348	− 9.7	None	−348	− 9.7
30	For scoliosis, D-11 to D-5	10	M	2,160	1,909	−251	−11.0	410	−661	−30.6
31	C-4, C-5, and C-6	30	F	3,231	3,033	−198	− 5.0	694	−892	−27.6
32	L-4 to S-1	54	M	3,807	4,128	+321	+ 8.4	420	− 99	− 2.6
Major Extremity Surgery Without Tourniquet Control										
33	Reconstruction coracoclavicular ligament with fascial strip	48	M	5,872	4,755	−1,117	−19.0	430	−1,547	−26.4
34	Open reduction and internal fixation, fracture medial femoral condyle	68	F	4,876	4,288	−588	−12.0	440	−1,028	−21.1
35	Osteotomy, shaft of right femur, and internal fixation with intramedullary Kuntscher nail and bone graft to site of osteotomy; bone grafts obtained from iliac crest	36	F	2,536	2,851	+315	+12.4	890	−575	−22.7
36	Open reduction and internal fixation with Kuntscher nail; fracture of shaft of left femur	14	F	3,130	3,636	+506	+15.1	880	−374	−12.0
37	Open reduction and internal fixation with intramedullary Kuntscher nail; femur, shaft, mid-third	22	F	3,229	3,940	+711	+22.0	835	−124	− 3.9

* Findings considered to represent laboratory error.

change in blood volume between the first and second determinations is the blood loss and surgical trauma incident to the procedure. Transfusions were used deliberately in excess of the suspected surgical blood loss in those instances where a low preoperative hemoglobin level and red blood cell count were reported. This was particularly true with respect to elderly patients with recent fractures about the hip. No instance of clinically detectable overtransfusion occurred. There were no transfusion reactions of either major or minor degree.

Method of Blood Volume Determination

A standard technique of blood volume determination with use of radioiodinated (I^{131}) human serum albumin (Risa) was adopted for the purpose of this study.[2] The use of radioactive chromium-tagged red blood cells was considered but was not adopted because it was technically more complex and time-consuming. Circulating blood volume determinations were calculated from the dilution of a precisely measured amount of radioiodinated serum albumin injected intravenously. The injected material

TABLE 1.—*Blood Volume Determinations in Volunteer Normal Control Subjects*

Subject	Blood Volume		Change	
	1st Determination, Cc.	2nd Determination, Cc.	Cc.	%
1	5,256	5,010	−246	−4.6
2	5,112	4,836	−276	−5.3
3	6,430	6,594	+164	+2.4

is thoroughly mixed with the plasma in less than 10 minutes, and the albumin molecules remain within the circulating vascular compartment.

If a blood sample is drawn from another vein, the blood volume can be determined as follows: Counts injected equal cubic centimeters injected, multiplied by the counts per cubic centimeter of standard, multiplied by the dilution factor of the standard. Counts injected equal counts per cubic centimeter of blood multiplied by the blood volume; therefore, blood volume equal the cubic centimeters injected, multiplied by counts per cubic centimeter of standard, multiplied by the dilution factor of the standard, and divided by counts per cubic centimeter of blood.

In this study, blood volume determinations were done immediately after induction of anesthesia and prior to the commencement of surgery, allowing 10 minutes from the time of injection before collecting a specimen of blood. A second determination of blood volume was made with use of a second injection of radioiodinated serum albumin made immediately after the closure of the skin incision. A scintillation well type of counter was used to measure radioactivity of the specimens. Background determination of radioactivity before each injection made possible serial blood volume determinations. Transfusions of intravenously given saline solution or other fluid injections were used as indicated clinically. The amount of transfusion was carefully measured, and the volume of transfusion given between the two blood volume determinations was recorded. The difference between the first and second blood volume determinations was considered to be secondary to the surgical procedure and to the amount of whole blood transfused into the patient during the time interval between the first and second determinations. An accuracy of ± 6% is considered average with the radioiodinated serum albumin dilution techniques.

Results

The technique utilized in this study was first standardized in dogs, after which three volunteer subjects submitted to serial blood volume determinations. These were done 30 minutes apart with two injections of radioiodinated serum albumin used in the same manner as was carried out in the study of surgical patients. Results of this preliminary study are presented in table 1.

The results of this study applied to surgical patients are shown in table 2. Cases are grouped according to the surgical procedure involved. Tabulations are made in order of change in blood volume, from those showing the greatest diminution of blood volume during the particular procedure to those showing the largest gain.

Summary

Major orthopedic surgery involves significant blood loss. This is of particular importance in elderly and young persons in whom a given increment of blood lost at surgery is likely to represent a high proportion of the preoperative circulating blood volume.

Transfusion during surgery is urgently indicated where clinical evidence indicates significant blood volume loss. Blood volume studies with radioactive elements offer a useful adjuvant in estimating transfusion requirements during or after surgery. It is of most value when a preoperative determination is available.

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ASSOCIATION OF HEMADSORPTION VIRUSES WITH RESPIRATORY ILLNESS IN CHILDHOOD

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Hemadsorption, a specific phenomenon dependent on the hemagglutinating property of the virus, was observed in two viruses newly recovered from children with acute respiratory disease. In a study involving 1,738 children in three hospitals, one or the other of the two hemadsorption viruses was recovered from 54 (6%) of 859 patients with respiratory disease. It appeared that the two viruses were capable of causing a wide variety of clinical manifestations, including croup, pneumonia, bronchiolitis, pharyngitis, and mild afebrile disease. Serologic studies suggested that approximately 20% of the respiratory illness severe enough to require hospitalization in the Washington, D. C., area in 1957-1958 was associated with hemadsorption virus infection.

A previous report [1] described the recovery of two new myxoviruses, type 1 and type 2 hemadsorption viruses, from children with acute respiratory disease, such as croup, pneumonia, and severe pharyngitis. During primary passage of the hemadsorption viruses in tissue culture, minimal cell destruction was observed. However, adsorption occurred when guinea pig erythrocytes were added to infected tissue cultures. This phenomenon, called hemadsorption, permitted rapid recognition and identification of these agents.[2]

Evidence was obtained that type 1 virus was etiologically associated with an outbreak of febrile respiratory illness with pneumonitis in a nursery population.[1] However, the experience with type 2 virus was insufficient to establish an association with illness.

The present study is part of a larger enquiry concerning the etiology of respiratory illness in which the contribution and importance of known and suspected viral pathogens is being assessed. The present investigation was carried out (1) to determine the role, if any, of type 2 virus in respiratory illness, (2) to obtain additional information about type 1 virus and its contribution to various respiratory disease syndromes, and (3) to elucidate the epidemiology and seasonal distribution of these agents.

Methods

Virus Isolation.—Monkey kidney tissue cultures maintained in Eagle's basal medium were inoculated with 0.2 ml. of throat swab fluid and incubated for five days at 37 C. Then 0.2 ml. of a 0.4% suspension of guinea pig erythrocytes was added and the cultures were placed at 4 C for 20 minutes. The tissue cultures were then examined microscopically for adsorption of red blood cells to the monkey kidney monolayer. If hemadsorption occurred, the tissue culture fluid was passed into a series of cultures for identification. Cultures that did not show adsorption of red blood cells at five days were fed with fresh maintenance fluid and tested again at five-day intervals for an additional 20 days.

Identification of Virus.—The hemadsorption-inhibition test was used for identification of virus isolates. After two days' incubation, the second-passage monkey kidney cultures were washed twice with Hank's balanced salt solution; 0.6 ml. of this solution and 0.2 ml. of a 1:10 dilution of inactivated specific rabbit serum treated with potent receptor destroying enzyme of Vibrio cholerae (RDE) was then added. The serum was incubated with the culture for 20 minutes at room temperature, after which guinea pig red blood cells were added and the tubes examined after standing for 20 minutes at 4 C. The isolates were identified by the serum that prevented hemadsorption. The first 26 isolates, 12 of which were type 1 and 14 of which were type 2, were also typed by the conventional hemagglutination-inhibition technique, and the results agreed with those obtained by the hemadsorption-inhibition test.

Serology.—Antibody for type 1 or type 2 virus was tested for by the complement-fixation technique. Type 2 complement-fixation antigen was prepared from monkey kidney cultures by sonic disruption of infected cells in the 10-kilocycle Raytheon oscillator for five minutes at 0 C, followed by clarification at 2,000 rpm in the International PR-1 refrigerated centrifuge. Type 1 complement-fixation antigen consisted of both fluid and disrupted cells from infected KB tissue culture flasks. Disruption was accomplished by rapidly freezing and thawing the culture five times. In the complement-fixation

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test, 2 full units of complement, 4 units of antigen, and overnight fixation at 4 C were used. The lowest initial serum dilution tested was 1:8, and a fourfold rise in antibody was considered indicative of infection.

Study Population.—The study population consisted of infants and children who were brought to the hospital with respiratory illness and a control group of infants and children of the same low socioeconomic background who did not have respiratory illness at the time the specimens for virus isolation were obtained—a total of 1,738 children. A careful medical history was taken for each patient with respiratory illness. The results of the physical examination were recorded at the time the patient was first seen. These findings, as well as the patients' course and the results of the x-ray studies, were evaluated before a subject was assigned to a specific disease category. Final assignment to a diagnostic category was made without knowledge of the virus isolation results. The composition of the study groups, according to diagnosis, time of study, sex, and mean age, is shown in table 1.

TABLE 1.—*Composition of Study Groups by Time, Sex, and Age*

	No. Tested, 1957-1958									Sex		Mean Age, Mo.
	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total	Male, %	Female, %	
Respiratory illness												
Inpatient												
Pneumonia	49	23	39	42	26	27	33	5	244	58.1	41.9	27.8
Croup	19	9	6	3	8	3	4	2	54	74.0	26.0	22.9
Bronchiolitis	9	13	10	7	4	18	15	1	77	55.5	44.5	11.3
Pharyngitis*	8	7	14	5	10	2	8	3	57	61.2	38.8	33.4
Outpatient (mild respiratory disease)												
Febrile	0	28	10	105	71	85	5	7	311	51.2	48.8	26.6
Afebrile	0	0	0	54	24	23	2	5	108	48.1	51.9	25.0
Undetermined	0	0	3	14	7	3	1	0	28	50.0	50.0	31.5
Total	85	80	82	230	150	161	68	23	879	54.5	45.5	26.4
No respiratory illness												
Inpatient	37	26	30	48	29	17	30	6	223	60.9	39.1	38.8
Outpatient		3	8	233	84	50	170	88	636	51.6	48.4	28.3
Total	37	29	38	281	113	67	200	94	859	54.0	46.0	31.0

* Including patients with pharyngitis and bronchitis combined or mild pharyngeal component with bronchitis predominating.

The studies were conducted at three hospitals in the Washington, D. C., area—Children's Hospital of the District of Columbia, District of Columbia General Hospital, and Georgetown University Hospital. The distribution of the individuals studied in the three hospitals is shown in table 2.

The detailed description of the clinical illnesses will be presented in subsequent publications. Suffice it to say that the illness of the vast majority of patients with croup, pneumonia, bronchiolitis, or pharyngitis did not appear to be associated with a primary bacterial etiology. Consistent with this clinical impression was the finding that beta hemolytic streptococcus was isolated from 8%, Diplococcus pneumoniae from 16%, and Hemophilus influenzae from 5% of this group. Patients with respiratory disease with evidence of hemadsorption type 1 or type 2 infection had the same incidence of bacterial pathogens as that described for the entire group. This incidence does not differ significantly from the values obtained by Rabe [3] for a group of healthy children studied during the winters of 1937 to 1946 in New Haven, Conn.

Approximately three-fourths of the infants and children with mild respiratory illness studied in the outpatient clinic had a fever (rectal temperature of 100 F [37.7 C] or greater) during the course of their illness. The temperature usually remained elevated one to two days and rarely exceeded 104 F (40 C). Bacterial cultures were not taken in this group, but the clinical impression was that of a nonbacterial illness.

Method of Study.—The same procedure was employed in studying the group with respiratory illness and the control group without such disease. A single throat swab in Hank's balanced salt solution was obtained from those with respiratory disease at the time of admission to the hospital or during the first clinic visit. This assured that the virus isolations were not derived from infections acquired in the hospital. Similarly, throat swabs were obtained from hospital control patients on admission to the hospital. Clinic control subjects were selected from among persons who had not visited the hospital within a 10-day period.

Results

Virus Isolation.—In order to elucidate the role of the hemadsorption viruses in respiratory illness, a controlled study was performed. The plan of the study was to compare the frequency of virus isolation from patients with respiratory disease with those from a group with no evidence of such illness. The latter group served as time, place, and age controls. As seen in table 1, the mean age of the respiratory group was 26.4 months, while that of the control group was 31 months. As mentioned under "Methods," the specimens were collected in such a manner as to exclude the possibility that virus isolations represented infection acquired in the hospital.

As shown in table 2, type 1 virus was isolated 20 times more frequently from patients with respiratory illness than from controls without such illness. Similarly, type 2 virus was recovered 34 times more frequently from individuals with respiratory disease. It is important to note that the hemadsorption viruses were recovered exclusively or almost exclusively from patients with respiratory disease in each of the three hospitals in the study. These findings suggest an etiological association between the hemadsorption viruses and a certain segment of respiratory disease occurring in the Washington, D. C., area during 1957-1958.

TABLE 2.—*Association of Hemadsorption Viruses with Acute Respiratory Illness*

	Respiratory Illness				No Respiratory Illness			
		No. of Isolations				No. of Isolations		
Hospital	No. Tested	Type 1	Type 2	Total	No. Tested	Type 1	Type 2	Total
Children's Hospital of the District of Columbia	714	15	31	46	750	1	1	2
District of Columbia General Hospital	155	4	3	7	105	0	0	0
Georgetown University Hospital	10	1	0	1	4	0	0	0
Total	879	20	34	54	859	1	1	2

Type 1 virus was recovered from infants and children with each of the respiratory disease syndromes under study (table 3). The recovery rate of type 1 virus did not vary appreciably among the patients with pneumonia, croup, bronchiolitis, pharyngitis, or mild respiratory tract disease, the average rate being 2.3%.

Type 2 virus was recovered from individuals with croup, pharyngitis, or mild illness. The highest isolation rate for either virus was observed for type 2 in the croup syndrome (16.7%). The overall recovery of type 2 virus (3.9%) was somewhat higher than that for type 1 virus (2.3%).

TABLE 3.—*Recovery of Hemadsorption Viruses from Various Respiratory Disease Syndromes*

		Virus Isolation					
		Type 1		Type 2		Total	
Illness	No. Tested	No.	%	No.	%	No.	%
Pneumonia	244	4	1.6	0	...	4	1.6
Croup	54	2	3.7	9	16.7	11	20.4
Bronchiolitis	77	1	1.3	0	...	1	1.3
Pharyngitis*	57	2	3.5	3	5.3	5	8.8
Mild respiratory tract disease							
Febrile	311	7	2.2	19	6.1	26	8.9
Afebrile	108	4	3.7	2	2.8	6	5.6
Undetermined	28	0	0	1	3.6	1	3.6
Total	879	20	2.3	34	3.9	54	6.1

* Including patients with pharyngitis and bronchitis combined or mild pharyngeal component with bronchitis predominating.

Serologic Studies.—The occurrence of hemadsorption virus infection in persons with respiratory disease was confirmed by the serologic studies shown in table 4. Paired serum specimens were available from 19 of the patients with respiratory disease from whom either type 1 or type 2 virus was recovered. In tests with these serums, the efficiency of the complement-fixation technique in detecting infection appeared to be extremely high. Thus, eight of nine patients from whom type 1 virus was isolated and all 10 persons yielding type 2 virus developed a complement-fixation antibody rise for the appropriate antigen.

In this study, as well as in other unpublished investigations, approximately one-half of persons from whom type 2 virus was isolated also developed a rise in type 1 complement-fixation antibody.[4] The reverse situation, i. e., a rise in type 2 complement-fixation antibody in patients infected with type 1 virus, has not been observed. Therefore, a serologic diagnosis of type 2 infection was assigned to patients from whom virus was not isolated but who developed a type 2 complement-fixation antibody rise, whether or not this was accompanied by a type 1 complement-fixation antibody rise.

TABLE 4.—*Serologic Evidence of Infection with Hemadsorption Viruses in Respiratory and Control Groups*

		Rise in Complement-fixation Antibody								
		Type 1*			Type 2			Total		
		No.			No.			No.		
Group	No. Tested	Total	Virus Isolated	%	Total	Virus Isolated	%	Total	Virus Isolated	%
Respiratory illness										
Pneumonia	156	28	2	17.9	10	0	6.4	38	2	24.4
Croup	43	5	2	11.6	13	8	30.2	18	10	41.9
Bronchiolitis	43	5	1	11.6	2	0	4.6	7	1	16.3
Pharyngitis†	32	5	2	15.6	5	2	15.6	10	4	31.2
Mild respiratory tract disease	13	4	1	30.8	0		0	4	1	30.8
Total	287	47	8	16.4	30	10	10.4	77	18	26.8
No respiratory illness‡	124	8	0	6.4	1	0	0.8	9	0	7.3

* Rise in complement-fixation antibody for type 1 virus only.
† Including patients with pharyngitis and bronchitis combined or mild pharyngeal component with bronchitis predominating.
‡ Inpatients; this entire control group did not age-match the groups for each of the separate respiratory syndromes (see table 1). However, when the serologic rate of infection (type 1 or type 2) of each of the respiratory groups was compared with that of a suitable age-matched control group, the differences were equal to or greater than those shown.

The complement-fixation antibody studies shown in table 4 supplement the virus isolation findings in suggesting an etiological role for the hemadsorption viruses in respiratory illness. Thus, the proportion of patients with respiratory disease who developed a complement-fixation antibody pattern indicative of type 1 virus infection (16.4%) or type 2 virus infection (10.4%) was, respectively, 2.5 and 13 times greater than that observed for the control group.

Patients with pneumonia, croup, bronchiolitis, or pharyngitis developed serologic evidence of type 1 infection approximately two to three times more frequently than the control group. These findings are consistent with the impression gained from the virus isolation data (table 3) that type 1 virus was associated with each of the aforementioned respiratory syndromes.

The highest incidence of antibody rise for type 2 virus occurred with the croup syndrome (30.2%). This finding supports the high rate of virus isolation (16.7%) from these patients. Type 2 complement-fixation antibody rises were significantly more frequent in patients with pneumonia, bronchiolitis, and pharyngitis than in the control group. Type 2 virus was not isolated from patients with pneumonia or bronchiolitis, and the serologic findings constitute the only evidence implicating this agent in these syndromes.

The question of dual infection with other viruses known to cause respiratory illness or suspected of such an association was considered. However, only 16% of patients with serologic evidence of hemadsorption virus infection showed a concomitant complement-fixation antibody rise for the other agents included in our tests, i. e., Asian influenza type A, croup associated, and adenovirus.[5]

The proportion of the observed respiratory illness associated with the hemadsorption viruses was considerably higher when estimated by the complement-fixation test than by virus isolation. Since by retrospective serologic study. Preliminary findings indicate that type 1 virus was associated with a large proportion of respiratory illness during the winter of 1956-1957 in Baltimore. Thus, 41% of 113 patients with pneumonia or bronchiolitis developed a complement-fixation antibody rise for type 1 virus. The amount of illness caused by type 1 virus was probably less than the indicated value, since the average interval between paired serum specimens was six weeks.[5b] In contrast to the findings for type 1 virus, there was no evidence that type 2 infection had occurred.

Virus Dissemination in Various Age Groups and During Different Months.—The influence of age on the isolation of the hemadsorption viruses is shown in table 5. Among infants and children up to 4 years of age who were ill enough to require hospitalization, type 1 or type 2 virus was isolated. The highest rate of recovery was in the 2-to-4-year-old group. In contrast, among the clinic patients, type 1 or type 2 virus was recovered as commonly from the 4-to-10-year-old age groups as from younger patients.

TABLE 5.—*Influence of Age on Isolation of Hemadsorption Viruses in Patients with Respiratory Illness*

	Severe Illness*					Minor to Moderate Illness					Total				
		No. of Isolations					No. of Isolations					No. of Isolations			
				Total					Total					Total	
Age, Yr.	No. Tested	Type 1	Type 2	No.	%	No. Tested	Type 1	Type 2	No.	%	No. Tested	Type 1	Type 2	No.	%
0-1	178	4	5	9	5.1	164	5	11	16	9.8	342	9	16	25	7.3
1-2	120	2	3	5	4.2	122	3	5	8	6.6	242	5	8	13	5.4
2-4	79	3	4	7	8.9	98	1	3	4	4.1	177	4	7	11	6.2
4-6	35	0	0	0		48	1	3	4	8.3	83	1	3	4	4.8
6-10	15	0	0	0		12	1	0	1	8.3	27	1	0	1	3.7
>10	5	0	0	0		3	0	0	0		8	0	0	0	
Total	432	9	12	21	4.9	447	11	22	33	7.4	879	20	34	54	6.1

* Pneumonia, croup, bronchiolitis, and pharyngitis.

many of the patients were not seen until the third to fifth day of illness, the virus recovery rate of 6.1% probably represents a minimal estimate of the contribution of the hemadsorption viruses to respiratory disease. The estimate available from the serologic studies, when adjusted for the inapparent infections which occurred in the control group, was approximately 19.5% (26.8% minus 7.3%). Since the opportunity for cross infection on the respiratory disease wards and on the control wards was not strictly comparable, this value must be considered as an approximation and probably represents a maximal estimate. The true value probably lies somewhere between the serologic and virus isolation estimates. In view of the short interval between acute and convalescent serum samples (three weeks) and the diagnostic efficiency of the complement-fixation technique, an estimate close to that obtained by serology seems most realistic.

Serologic Evidence of Type 1 Infection During 1956-1957.—The past role of the hemadsorption viruses in illness is currently under investigation

It is of interest that type 1 virus was recovered during six of the eight months of this study (table 6). Similarly, type 2 virus was isolated during seven of the eight months. During March and May, when type 1 virus was not isolated, serologic studies failed to reveal evidence of infection with this agent. November, the month when type 2 virus was not recovered, was also the interval during which the serologic study indicated the lowest rate of infection (3.3%).

It is of some interest that type 1 and type 2 viruses were each introduced into a welfare nursery in the Washington, D. C., area at the time of their greatest prevalence in the general community. The rate of recovery of type 1 virus from the community varied from 1.2 to 7.5%. The highest rate occurred in November, when type 1 virus was responsible for a sharp outbreak of febrile respiratory disease in the welfare nursery.[1] Similarly, an extensive outbreak of type 2 infection started in the same nursery in May, the month when this agent was at its highest level (13%) in the community.[6]

Comment

A previous report suggested the etiological association of type 1 virus with respiratory disease. In an outbreak of febrile disease with upper respiratory symptoms and pneumonitis, which occurred in a welfare nursery, illness was significantly more prevalent among children with type 1 infection.[1] In the present investigation, additional evidence was obtained for the etiological role of type 1 virus in respiratory disease; this agent was recovered almost exclusively from children with respiratory illness.

Volunteer studies have established that type 2 virus can cause mild upper respiratory symptoms in adults, but the present investigation provides the first evidence for the role of this agent in childhood disease.[7] As in type 1, the type 2 agent was recovered almost exclusively from children with respiratory symptoms.

Both hemadsorption viruses were recovered from children with mild illness, as well as from persons with respiratory disease severe enough to require admission to the hospital. The findings suggest that these agents are capable of causing a wide spectrum of clinical manifestations. The role of other factors, such as concomitant bacterial infection, in determining the severity of illness cannot be assessed at the present time.

TABLE 6.—*Recovery of Hemadsorption Viruses During Different Months of Study Period, 1957-1958*

	Respiratory Illness			No Respiratory Illness		
		Recovery, %			Recovery, %	
	No. Tested	Type 1	Type 2	No. Tested	Type 1	Type 2
Oct.	85	1.2	2.4	37	0	0
Nov.	80	7.5	0	29	0	0
Dec.	82	3.7	2.4	38	0	0
Jan.	230	1.7	4.3	281	0	0.4
Feb.	150	2.7	5.3	113	0.9	0
March	161	0	5.0	67	0	0
April	68	2.9	1.5	200	0	0
May	23	0	13.0	94	0	0
Total	879	2.3	3.9	859	0.1	0.1

Over the eight-month period of October, 1957, to May, 1958, type 1 virus was estimated by serologic studies to be associated with 10% (16% minus the 6.4% observed for the controls) of the patients with respiratory illness who required hospitalization and type 2 virus with 9.6% (10.4% minus the 0.8% observed for the controls). The combined contribution of these agents, 19.5%, exceeded a similar estimate for Asian influenza A, which was 13%. During the month of October, influenza accounted for a large proportion of illness (52%); however, its relative quiescence during the remainder of the study period accounts for the low over-all estimate. When the complement-fixing antibody rises that were attributable to the hemadsorption viruses, influenza A, and adenoviruses (2%) were combined, it was possible to make an etiological diagnosis by serologic means for approximately 35% of the patients with respiratory disease admitted to the hospital. It must be emphasized that these findings reflect only the viral experience of a hospitalized indigent population of the Washington, D. C., area during 1957-1958. In other years and in other localities, respiratory illness may be associated with agents not active during the present study.

The largest contribution of the hemadsorption viruses to illness occurred in croup (acute laryngotracheobronchitis), which represents the most acute emergency among the various respiratory syndromes in infancy and childhood. The amount of croup associated with both agents was estimated by serologic studies to be 42%. Thirty per cent of patients with this syndrome developed a complement-fixing antibody rise for type 2 virus and 12% for type 1 virus.

Dissemination of both type 1 and type 2 viruses during most of the fall, winter, and early spring of 1957-1958 was in contrast to the pattern observed in the same population for Asian influenza A. The latter agent had a peak prevalence during October, followed by low activity during November, January, and February, as evidenced by both virus isolation and serologic studies. In unpublished studies, evidence of year-round occurrence of the hemadsorption viruses was obtained.[8] Type 1 or type 2 virus was isolated during the months of June, July, and August, 1958, thus supplementing the recovery of virus from October, 1957, through May, 1958. The recovery rate for these viruses during the June through August period was 2.3% for both type 1 and type 2.

Summary

In a study involving 1,738 children who were patients in three Washington, D. C., hospitals, types 1 and 2 hemadsorption viruses were recovered almost exclusively from patients with respiratory disease. The results suggest that these agents play an etiological role in respiratory illness. The patients from whom the agents were recovered had illnesses ranging from mild afebrile upper respiratory disease to the syndromes of pneumonia or croup.

The virus recovery rate among patients with respiratory disease was 2.3% for type 1 and 3.9% for type 2. The amount of illness associated with these agents was higher (19.5%) when estimated by the complement-fixation technique. The highest rate of virus recovery (16.7%) or complement-fixing antibody rise (30.2%) occurred for type 2 virus in patients with the croup syndrome.

Addendum

The rate of recovery of hemadsorption viruses from infants and children with respiratory illness from October, 1957, to May, 1958, as reported in this communication, was maintained during a period of additional experience from June through

December, 1958. In the total study (October, 1957, to December, 1958), type 1 hemadsorption virus was isolated from 2.6% (43) of 1,654 patients with respiratory disease and type 2 hemadsorption virus from 3.6% (60). The recovery rate of type 1 virus from 1,381 controls was 0.14% and of type 2 virus 0.22%. Type 2 virus was recovered from 19% (16) of 84 patients with croup and type 1 virus from 2.1% (8) of 378 with pneumonia.

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AIR HYGIENE FOR HOSPITALS

I. ARRESTMENT OF AIRBORNE AND DUSTBORNE STAPHYLOCOCCI BY A HOSPITAL VACUUM CLEANER

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The desirability of excluding all types of vacuum cleaners from hospitals is disputed. The efficiency of one type of machine was tested by a variety of physical and bacteriological procedures, including the use of freshly generated aerosols of a standard strain of staphylococci. When fresh paper filter cones were used in the machine, penetration by the cocci never exceeded 0.49%, and when dust-coated filter cones were used, apparent arrestment of bacterial droplet nuclei rose to more than 99.99%. The evidence did not justify an indiscriminate condemnation of vacuum cleaners as unfit for use in hospitals. It indicated, rather, that the machine tested was very efficient in many hospital situations when used by well-trained personnel. The observations also suggested various improvements in design (such as disposable containers for dirt) and operation (such as heat sterilization of dust-laden canisters) that should be explored further.

Since hospital dust is a common reservoir of bacteria, molds, and possibly viruses, the importance of dust control in hospital housekeeping is generally accepted.[1] Current interest in the prevention of staphylococcic infection in hospitals has focused attention on methods of cleaning, but there has been no general agreement about the best means of controlling dust and airborne organisms. As is often the case, the number of opinions about the effectiveness of different methods exceeds the number of controlled studies on which such opinions could reasonably be based. The diversity of thought regarding the use of vacuum cleaners is a case in point.

The range of current medical opinion on this subject runs the gamut from acceptance of some types of vacuum cleaners to categorical condemnation of all vacuum cleaners as unfit for use in hospitals. According to Walter,[2] certain cyclonic and water-trap separators are adequate for hospital use. At the other extreme, the view is widely held that vacuum cleaners merely redistribute organisms passing through them.[3] If one may judge from casual conversations, certain physicians are under the impression that vacuum cleaners may disseminate

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more organisms than they collect. Since organisms are unable to multiply in the dry state, this would be impossible unless water or some aqueous solution were aspirated into the machine.

In air-cleaning terminology, fine filtration refers to the arrestment of atmospheric dust or of an aerosol of particles averaging 1μ or less in diameter.[4] Studies of the arrestment of such particles are carried out by the manufacturers of some vacuum cleaners but are seldom publicized. In a recent survey of vacuum cleaners by a consumers' organization, 43 makes of machines were tested for rug-cleaning ability and several other characteristics.[5] Retention of particles (efficiency of filtration) and freedom from disturbance of floor dust were not among the properties tested. A machine advertised as the "vacuum cleaner that walks by itself" was found to lighten the dead weight of the machine by directing the blast of exhaust air straight downward! However restful this arrangement may be for the weary housewife, no comment is needed on the suitability of cleaners such as this for use in hospitals.

In a study of a cylinder-type cleaner (Hoover, model 402), Rogers[6] concluded that the bag in this machine acted as a bacterial as well as a dust filter. The bacterial efficiency of the bag increased as dust became entrapped in its meshes. Although these conclusions are in agreement with those to be reported in this paper, the crude method of exposing an open plate in the air stream unfortunately deprives his study of quantitative significance.

Our interest in the subject was stimulated by finding coagulase-positive staphylococci among species recovered from the dust-coated filter cones of the vacuum cleaners in the Massachusetts Eye and Ear Infirmary. Since the same species were also present in air samples taken in the areas where the vacuum cleaners were in use, it seemed important to determine whether these machines were disseminating or collecting organisms present in the air. It was therefore decided to test the retentive efficiency of our machine and also to establish criteria for selection of vacuum cleaners suitable for use in hospitals.

Properties of Vacuum Cleaners

Dry vacuum cleaners are self-contained filter-blower systems which pass air at relatively high velocity through porous mediums such as paper, cloth, or mats of mineral or organic fibers. In such systems, arrestment of particles smaller than the interstices between fibers is largely the result of inertial impaction of particles on fibers,[7] rather than the result of straining or sieving, which removes particles larger in diameter than the interstices between fibers. In both mechanisms, arrestment of fine particles increases with increasing dust load upon the filter face, although only at the expense of increasing pressure drop across the filter and of eventual reduction in volume of air passing through the filter.

Properties to be considered in selecting a vacuum cleaner for use in a hospital include essential properties such as cleaning ability and freedom from turbulence, and other desirable properties.

Cleaning Ability.—Clearly, the first requirement of any vacuum cleaner must be its ability to pick up dirt by suction and to remove it from the air passing through its filters. The volume of air so treated must be suited to the requirements of the situation in which the machine is to be used.

Freedom from Turbulence.—Exhaust from the machine should not cause disturbance of floor dust by strong currents traveling at or near floor level. Such currents bring about resuspension of particles deposited by gravitational or random settling.

Quietness of Operation.—Especially in hospitals, the objection to noisy machines and the desirability of quiet operation are self-evident.

Disposability of Waste.—In certain situations, especially in the disposal of radioactive or toxic dusts, the use of a disposable bag or paper liner, which can be removed and discarded without dissemination of particles, is mandatory for the protection of personnel. In hospitals, this feature is also desirable for the prevention of infection.

Other Characteristics.—Such factors as cost (initial, operating, and maintenance), dependability, portability, adaptability, and other less essential features are to be considered only after the above requirements have been satisfied.

Most of the requirements are met by built-in vacuum ducts provided at the time of construction of a building. For hospitals lacking such central facilities, attention to the properties listed above is recommended.

Apparatus and Materials

The choice of the unit tested in the present study and referred to hereafter as "the machine" was based on (1) favorable experiences with it in the hospital from which this study is reported, where it is used exclusively throughout the wards and floors, and (2) possession by it of the properties of freedom from disturbance of floor dust (air is exhausted horizontally from the top of the machine in a circular pattern 11 in. above the floor) and quietness of operation (this unit was the quietest of all machines tested in the consumers' study referred to above).

The lack of a disposable container (dirt is collected in a metal canister beneath a disposable paper filter cone) is considered a disadvantage less serious than the production of turbulence at floor level.

The Machine.—The vacuum cleaner (Filter Queen, model 500) used in our hospital is of the canister type. According to data provided by the manufacturer, it is capable of passing 45 to 55 cu. ft.

of air per minute when it is operated at 105 to 115 volts. At 120 volts it is said to move approximately 60 cu. ft. of air per minute with all filters in place.

Air entering the canister is directed in a circular path around the vertical inside face of the canister wall. It first encounters the under side of the primary filter, an inverted, disposable paper cone of pure hemp stock approximately 0.006 in. in thickness with a filtering area of 1.0 sq. ft. Tests reported by the manufacturer indicate that its efficiency when unused is very high for particles as small as 3μ in diameter. As it accumulates a coating of dust its efficiency increases and progressively smaller particles are arrested by it. Since gross particles fall to the bottom of the canister, volume output remains high until the canister is tightly packed with dirt.

The secondary filter, a disk of thread-reinforced paper, is interposed between the primary filter and the motor to protect the latter against gross grit in case the machine is operated without the primary filter. The arrestment property of the secondary filter for fine particles is low.

The tertiary filter and silencer is a bat made from wood pulp treated with a bonding material around its outer surface. This filter forms a ring within the circumference of the circular dome of the machine, and air, after passing through it, is exhausted through a number of vents in the side of the dome. The manufacturer reports that this filter retains 70% of dioctyl phthalate smoke (a standard aerosol of particles uniformly 0.3μ in diameter) and almost 100% of particles 1μ in diameter. These figures are all subject to qualification by statement of the relative humidity existing at the time of the tests and also of the nature of the particles encountering the filters.

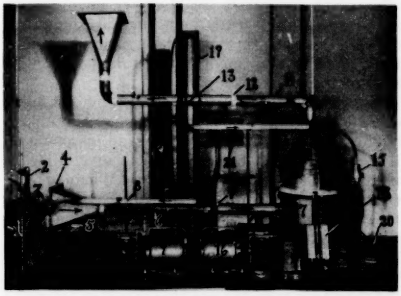
The machines used in this study were obtained from two sources. New units were submitted by the manufacturer for testing. Cleaners in regular use were taken from the floors of the hospital for testing with their accumulated dust load.

Duct-Work.—A round, galvanized, sheet metal downspout, 2 in. inside diameter, was fitted with bayonet adapters for attachment to the intake and exhaust connections of the machine and to a truncated cone-cylinder of sheet metal which fitted over the top of the machine in such a way as to collect all the air emerging from the ports in the side of the dome after passage through the third filter and silencer. (The ducts and collecting funnels were made by the manufacturer to our specifications [see figure].) The ducts were equipped with dispersion disks of the Stairmand [8] type to create turbulence at the sampling points. A mechanical device, designed to straighten a spiraling column of air, was incorporated in the duct downstream from the machine and 6 in. upstream from the downstream dispersion disk. All joints were made as nearly airtight as possible with suitable gasketing.

Air Samplers.—Identical Millipore filter (MF) holders equipped with calibrated limiting orifices were used to hold 0.047-mm. cellulose ester gel membranes (MF) of either the aerosol assay or the hydrosol assay types. Retention of airborne bacteria by membranes of normal pore diameter 0.45μ is essentially 100%.[9] Maximum flow rates across these membranes are well in excess of the sampling rates used.

Sampling Pumps.—Identical vacuum pumps, capacity 1.3 cu. ft. per minute, were attached by vacuum rubber tubing to the filter holders. The pumps were adjusted to operate at capacity and to draw a vacuum of 24 in. Hg.

Sampling Points.—Right-angle glass tubes of diameters suited to the sampling flow rates were inserted into the ducts, pointing upstream in the center of the ducts and tightly fitted to the openings into the duct wall. The filter holders were connected to the sampling tubes by flexible plastic tubing (Tygon) and rubber tubing in such a way as to insure an airtight seal. The sampling points were placed at the prescribed distance (three to six duct diameters) downstream from the dispersion disks and were located 14 in. upstream and 20 in. downstream from the unit itself. The upstream sampling point was 21 in. from the intake.



Apparatus for test runs: 1, nitrogen supply line; 2, flow regulator; 3, Millipore filter holder; 4, glass fiber medium; 5, nebulizer; 6, location of upstream dispersion disk; 7, upstream sampling point; 8, humidifying column; 9, upstream sampling pump; 10, collecting funnel; 11, location of flow straightener; 12, location of downstream dispersion disk; 13, downstream sampling point; 14, humidifying column; 15, Millipore filter holder; 16, downstream sampling pump; 17, canister of machine; 18, wet-and-dry-bulb thermometers; 19, mercury manometer; 20, Variac transformer.

Cultures and Bacteria-Bearing Dust.—The Food and Drug Administration strain 209 of Staphylococcus pyogenes var. aureus (American Type Culture Collection 6538) was used for all freshly generated aerosols. Ten-to-16-hour broth cultures were diluted 1:100 with sterile distilled water for atomization. Cultures and stock dilutions could be maintained

for many days at 4 C (39.2 F) without apparent change in titer. Fresh cultures and fresh dilutions were made at frequent intervals.

Dry aerosols were produced by aspiration of dust from stuffed toy animals, obtained from the children's ward, through an ordinary vacuum cleaner hose attached to the intake of the duct system. The dust aerosols were rich in bacteria and molds of many species.

Atomization Equipment.—DeVilbiss 40 atomizers were activated by pure nitrogen from commercial cylinders. Flow rates were measured and regulated by a Hoke flowmeter, capacity 9 liters per minute.

Control of Variables

Sampling.—Sampling volumes were either 10 liters or 26.3 liters per minute, being controlled by calibrated orifices in the MF filter holders downstream from the filter membranes. In all filterless runs and in some test runs, identical sampling rates were used at the upstream and downstream sampling points. In others, 10 liters per minute were sampled at the upstream point and 26.3 liters per minute at the downstream sampling point. Sampling velocities were kept approximately isokinetic with maximum duct velocities.

In a representative number of runs, but not in all runs, the air drawn from the ducts was humidified by passing it through glass tubing, 18 in. long and 1 in. in outside diameter, lined with several layers of rolled, moistened filter paper (Whatman 1), located in series upstream from the MF holders.

Temperature and Relative Humidity.—Room air taken into the system varied in temperature from 74 to 80 F (23.3 to 26.7 C). Its relative humidity varied from 49 to 67%.

Exhaust air from the machine varied in temperature from 103 to 126 F (39.4 to 52.2 C), depending on the filters in the machine and the dust load on the primary filter cone. The relative humidity of the exhaust air varied from 19 to 12%, depending on the degree of warming involved.

Sterility Controls.—Test organisms were not recovered from the downstream duct except when they were being introduced at the intake. There was, therefore, no need to sterilize the unit and ducts. Molecular filter membranes were sterilized by autoclaving for most of the tests and control runs. Failure to sterilize them appeared to make no difference in results obtained, since the test organisms were not present on the filter membranes or in the environmental air.

Velocity and Flow Rates.—Air flow rates through the machine and duct system at given voltages were provided by the manufacturer. The unit was operated at line voltage (115-117 volts A. C.) in all test runs (output approximately 55 cu. ft. per minute). The line voltage was recorded continuously over a three-day period during which tests were being conducted. There was no evidence in any of the tests or control runs to suggest that variation in flow rates or velocities, within the limits of normal operation, were in any way critical in their bearing on the efficiency of filtration.

Average linear velocities in the duct system were calculated on the basis of flow rates. Maximum duct velocities were measured directly with a Hastings, model G, Air-Meter.

Air Contaminants.—Although the environmental air was relatively free from contaminants, occasional saprophytes appeared on the MF membranes. These usually grew more slowly than the test organisms and appeared to have no effect on the results of test runs. Nevertheless, in a representative series of runs the intake air was filtered through a deep-bed glass fiber medium (Aerosolve 95) of known high efficiency against airborne bacteria. There was no difference between the results of these tests and those in which the intake air was not filtered.

Filterless Runs.—In order to determine the expected recovery rate at the downstream sampling point, about two dozen runs were made with the primary and secondary filters removed and the tertiary filter bypassed. Recovery rates of 92 to 58% were noted, depending somewhat on the temperature of the exhaust air. These filterless runs were made at least once with every series of test runs. When the sampled air was humidified before passage through the MF filters, recovery in filterless runs increased to 93%, without any apparent change in the results of test runs.

Method

With the unit operating at full output, fresh bacterial aerosols were generated at the intake by atomization at the rate of 4 to 6.4 liters of nitrogen per minute, or, alternatively, dry aerosols were produced in the manner described. The input was allowed to flow for one to five minutes before sampling was begun.

The samplers were turned on simultaneously and operated for the desired period, usually 60 seconds by the clock. They were then turned off, and the filter membranes were removed and immediately transferred to the surface of trypticase soy agar in a 90 mm. petri dish. Both the upstream and the downstream membranes of a single run could be accommodated on a single plate with negligible overlap in the center.

Plates were incubated for 24 hours at 37 C (98.6 F) and kept at 25 C (77 F) for an additional 24 hours. Colonies were then counted under suitable magnification, using the ophthalmic biomicroscope and slit lamp. In many of the test runs it was possible to count all the colonies on the downstream membrane. Total counts on upstream membranes were estimated from counts of a sufficient number of grid-marked squares.

The use of magnification permitted essentially 100% accuracy in counting up to 1,000 colonies per MF filter, very high accuracy (plus or minus 5%) in counting up to 10,000 per MF filter, and a fair approximation in counting up to 20,000 colonies.

TABLE 1.—*Typical Arrestment of Nebulized Staphylococci by Machine with New Filters*

Run*	Filters	Colonies/Cu. Ft. Upstream	Colonies/Cu. Ft. Downstream	Arrestment, %
S-3	None	246	225	...
S-4	All	202	1	99.51
S-5	All	730	1	99.86
S-6	All	1,860	7	99.60
S-7	Auxiliary†	1,350	65	95.18
S-8	Auxiliary	1,260	53	95.79
S-9	Tertiary	1,120	25	97.77
S-10	Tertiary	1,000	28	97.20
S-11	Primary	1,140	152	86.15
S-12	Primary	1,180	143	87.97

* Representative series of consecutive runs.
† An experimental filter, not part of the standard machine.

When only a few colonies were present, as was often the case on downstream membranes, they grew so large that no magnification was necessary.

Results

Fresh Moist Aerosols.—Suspensions of Staph. pyogenes var. aureus nebulized into the system at the intake showed consistently a very low degree of penetration of the filters in the machine. When new, unused paper cones (primary filters) were used, this averaged 0.31% in a large series of runs. In no instance was the penetration greater than 0.49%. The results were apparently unaffected by minor variation in rates and velocities of sampling. When dust-coated filter cones were used, apparent arrestment of bacterial droplet nuclei rose to more than 99.99%. The results are shown in tables 1, 2, and 3.

Old Dry Aerosols.—When dry, dustborne organisms were aspirated into the system, spreading growth of molds and high concentrations of contaminated particles at the outside edges of the upstream sampling membranes made enumeration of colonies impossible. Since the downstream membranes were almost entirely free of colonies, inability to determine the exact number of colonies recovered at the upstream sampling point made little difference in the results (table 4).

TABLE 2.—*Average Arrestment of Nebulized Staphylococci by Machine with New Filters*

Runs, Av. No.	Filters	Arrestment, %	Deviation, %
11	All	99.69	±0.18
4	Tertiary alone	97.52	±0.25
3	Primary alone	86.00	±2.00
3	Secondary alone	46.00	±4.00

Output of Organisms by Loaded Machine.—When the machine was operated while carrying a generous load of dirt in the canister and a heavy felt of dust on the primary filter, samples of the exhaust air showed no organisms in 4.65 cu. ft. of air sampled over a five-minute period. This result was repeatedly confirmed in shorter runs.

Creation of Turbulence.—No appreciable turbulence of air around the machine could be detected at floor level with cigarette or titanium tetrachloride smoke. At 12 in. above floor level, the exhaust from the switch port would blow out a paper match held 2 ft. away. At other points around the periphery, a match held 11 to 13 in. above floor level (but no higher nor lower) was blown out at distances from 9 to 14 in. from the side of the dome but not at greater distances.

TABLE 3.—*Average Arrestment of Nebulized Staphylococci by Machine with Dust-Coated Filter Cones*

Runs, Av. No.	Filters	Colonies/Cu. Ft. Upstream	Colonies/Cu. Ft. Downstream	Arrestment, %
7	All	7,937	0.71	99.99+
2*	Primary	7,415	1.5	99.98—
2*	None	6,225	5,800	...

* Humidified sampling; four consecutive runs.

Operational Performance.—As previously noted, quietness of operation is a feature of this machine. Units in daily use on the wards for periods up to nine years have been dependable and have required a minimum of maintenance. The negative pressure developed by the machine (60-75 in. H_2O), together with the volume of air moved by it, have been adequate for cleaning rugs, pillows, and mattresses as well as bare floors.

Comment

The main part of the study, and the part having the greatest statistical significance, was the quantitative sampling of nebulized staphylococcic aerosols. Certain questions remain to be answered regarding these experiments. The first has to do with the fate of droplets issuing from the nebulizer before they encountered the filter face. The second relates to the size and state of dispersion of bacterial particles remaining after evaporation of the droplets. The third question is concerned with the rates of recovery observed in filterless runs.

TABLE 4.—*Typical Arrestment of Dustborne Bacteria* by Machine with New Filters*

Run	Filters	Colonies/Cu. Ft. Upstream	Colonies/Cu. Ft. Downstream
S-13	All	Heavy growth	0
S-14	All	Heavy growth	0
S-15	All	Heavy growth	1
S-16	None	Heavy growth	Heavy growth

* Aspirated from stuffed toy animals.

In regard to the first question, droplets formed by a DeVilbiss 40 nebulizer operated at 6.4 liters per minute have an apparent diameter of 13 μ.[11] Water droplets of this size evaporate in 0.02 seconds in still air of relative humidity 50% at 22 C.[12] In moving air their evaporation time would presumably

be shorter. Calculation of the time required for droplets to travel the distance from the intake to the filter face shows that this interval was the same as or longer than the time required for evaporation of droplets to occur in still air at the same temperature and humidity. Doubling this interval by adding an extension to the intake had no effect on the arrestment observed.

According to Kethley, Cown, and Fincher,[11] the majority of particles produced by atomization of suspensions of Serratia marcescens under conditions similar to those prevailing in these experiments contained a single bacterial cell. Although we used no prechamber to screen out larger particles, observation of organisms stained on sampling filter membranes with the ordinary light microscope and of unstained organisms with the phase contrast microscope indicated that the typical particle recovered from the air stream consisted of a single bacterium of approximately 0.4 to 0.7 μ diameter. We were impressed by the small size of these staphylococci in smears in comparing them with other cocci observed in routine clinical cultures. It was our impression that these organisms were as small as the smallest bacterial particles likely to occur as droplet nuclei in the natural state.

Two factors were believed to be responsible for the variation in recovery rates observed during filterless runs. Spontaneous death from desiccation presumably accounted for slight losses which must have been in proportion to warming of the air during its passage through the system. According to the results of Ferry,[13] in observations with nonpathogenic staphylococci, these losses must have been insignificant during the short time interval involved.

It is well known that considerable loss of viability of organisms isolated from air can occur after their arrival on a filter surface.[7] Goetz [9] found that for Staph. pyogenes var. aureus, an organism rather insensitive to atmospheric conditions, the recovery of cells theoretically contacting the MF surface varied between 50% and 100% at flow rates bracketing those used in our study. Recovery was not affected within these limits by variation of flow rates nor of the relative humidity. Since our recovery rates parallel those of Goetz rather closely, it seems reasonable to attribute the variation observed to the factor of viability loss on the MF surface.

By the same token, it is possible that the results observed in test runs represent not only mechanical arrestment of particles but a combination of this with biological inactivation of viable particles on the filters of the vacuum cleaner. However, the recovery of many viable forms from the dust on the filter cones showed that arrestment alone could account for retention of dustborne bacteria at least.

Although the efficiency of the dust-loaded machine against airborne bacteria appears almost unbelievably high, analysis of the combined performances of new primary and tertiary filters operated singly shows a close correspondence with the arrestment observed with both filters operating together in their normal combination. Thus, it will be noted that penetration of the new primary filters averaged 14% and that of the tertiary filters, 2.5%. Multiplication of these factors gives a figure of 0.35%, which falls within the range observed for penetration of the intact machine with a new primary filter in place. The sharp increase in efficiency of the primary filter, with accumulation of a dust coating on its undersurface, to values approaching 100% arrestment, when combined with the 97.5% efficiency of the tertiary filter, could easily account for a number of sterile membranes at the downstream sampling point and for the extremely low penetration observed in test runs of the dust-loaded machine. It will be clear from inspection of these results that a 50% variation in viability after sampling would make little difference in the significance of the results obtained.

Summary and Conclusions

The evidence presented in our study fails to justify categorical condemnation of vacuum cleaners as unfit for use in hospitals. The results indicate the efficiency of one machine against bacterial aerosols consisting of suspended droplet nuclei or dustborne organisms. Extension of similar techniques to the investigation of other brands might demonstrate that their effectiveness has likewise been underestimated.

Its arrestment of bacteria, its freedom from disturbance of floor dust, and its quietness of operation permit a qualified endorsement of the vacuum cleaner tested in this study (Filter Queen, model 500) for use in hospitals. Its only drawback is lack of a fully disposable container for collected dirt. This lack can be largely offset by careful handling of dust-coated filters and by selection of a space removed from patients' quarters for emptying the canister and changing the primary filter cones. In our hospital, cleaning personnel bring their vacuum cleaners to the basement every other morning for emptying while they pick up supplies. The canisters are emptied by a trained man into a common bag which is then incinerated. At the same time the machines are checked, serviced as needed, and equipped with new filter cones for the next two days' use.

Special precautions should be adopted in tuberculosis sanatoriums and other infectious disease units for the protection of personnel charged with the responsibility of emptying the canisters. If necessary, heat sterilization of the canister with its dust load could be performed before final disposal of the latter is undertaken.

The vacuum cleaner used in our hospital was found to combine efficient arrestment of viable air-

borne and dust-borne bacteria with quietness of operation and freedom from disturbance of floor dust.

200 Beacon St. (16).

Melvin W. First, Sc.D., gave advice during this study. Mr. Werner Mueller Jr. made parts of the mechanical equipment.

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NEONATAL INFECTIONS IN A COMMUNITY HOSPITAL

REPORT OF TWO OUTBREAKS

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Two outbreaks of neonatal infection in a nursery are described. The first involved 4 children and was fatal to 3; the second, a year later, involved 26 children and was fatal to 9. No one organism could be held responsible, but in the first outbreak Listeria monocytogenes predominated, and in the second the organisms found were mainly group A streptococci. The experience emphasized the danger of overcrowding in nurseries, the importance of due attention to the umbilicus as a likely portal of entry for neonatal infections, and the need generally of enforcing rigid aseptic techniques.

The purpose of this paper is to record the problems and experience encountered in two outbreaks of neonatal infections in a community hospital. It includes the sequence of events leading up to and including the outbreaks, the investigations undertaken, measures instituted to control the outbreaks, and clinical observations that were made.

The outbreaks occurred in the Baton Rouge (La.) General Hospital, a community hospital with approximately 300 beds. The nursery occupied a total area of 727 sq. ft. There has been a steady increase in the number of yearly deliveries: in 1951, there were 1,844 deliveries; in 1952, 1,952; in 1953, 2,350; in 1954, 2,448; in 1955, 2,435; in 1956, 2,712; and in 1957, 3,093.

The 1956 Outbreak

Clinical Observations.—In October, 1956, because of construction work in the nursery, for a period of about 10 days a temporary nursery was established in three postpartal rooms with a total area of 540 sq. ft. The nursery census at the time, unfortunately, was relatively high (fig. 1), which led to further overcrowding.

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On Oct. 24, 1956, a female infant (see table, case 1) was born and admitted to the temporary nursery. From birth the infant had respiratory difficulty, cyanosis, and a poor sucking reflex. She died in the nursery on Oct. 28, 1956, after several mild convulsions. The white blood cell count was 59,000 per cubic millimeter. Postmortem blood culture yielded organisms that first were interpreted as diphtheroids but that subsequently were identified as Listeria monocytogenes.

After the death of this baby, two infants born on Oct. 21, 1956, and discharged from the nursery on Oct. 25, 1956, and Oct. 26, 1956 (table 1, cases 2 and 3, respectively) were readmitted to the hospital, where they died. The onset of their symptoms were 10 and 11 days after birth, with deaths on the 14th and 16th days respectively. Both infants were

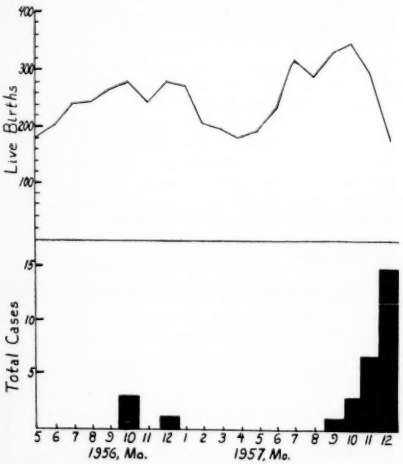

Fig. 1.—Distribution of live births and cases of neonatal infection by month of birth.

apathetic, with fever and cyanosis. The child in case 2 also developed jaundice and petechiae, with some induration of the umbilicus. That in case 3 developed convulsions prior to death. Beta hemolytic streptococci were isolated from the blood of the infant in case 2 and L. monocytogenes from purulent spinal fluid of that in case 3.

After transfer of infants back to the permanent nursery there were no further neonatal infections until December. The baby in case 4 (see table), born Dec. 10, 1956, was readmitted at 12 days of age because of fever, apathy, anorexia, and cyanosis. L. monocytogenes was recovered from purulent spinal fluid. This infant responded well to mixed antibacterial therapy and recovered without apparent sequelae.

Pathological Observations.—Autopsies were performed on all three infants who died. On gross examination there was an infected umbilicus in two (cases 2 and 3), while in the other infant (case 1) this area appeared normal. In the infant in case 1 there were congenital varicosities on the mitral and tricuspid valves with a superimposed acute valvulitis; there was also acute pneumonitis with septic emboli, focal hepatic necroses, and small adrenal abscesses from which L. monocytogenes was recovered. The baby in case 2 showed a fibrinous peritonitis. In the patient in case 3 acute meningitis was the only significant finding.

1957 Outbreak

After the 1956 outbreak, a nursery liaison committee was established and specific recommendations made regarding any further expansion of nursery facilities and use of personnel. Until September, 1957, there were no unusual neonatal infections and no deaths due to neonatal infection were reported. In October and November, several infants developed neonatal infections, culminating in another explosive situation in December (fig. 1).

Clinical Observations.—The only patients considered to have neonatal infections in this outbreak had onset of symptoms within 30 days of birth. In addition, they had either positive findings on blood or spinal fluid cultures or a minimum of two of the signs or symptoms listed in table 2 without obvious congenital anomalies to account for these findings.

Symptomatology: The most common sign was fever (rectal temperature over 37.7 C [99.8 F]). Another frequent finding was a notable "change" in the infant, i. e., apathy, anorexia, or irritability. Evidence of omphalitis was found in several infants. Clinical signs of an unhealthy umbilicus, although not often striking, were present in every instance in which postmortem examination revealed evidence of inflammation of the umbilical vein. Jaundice was not a frequent finding, and in both instances where recorded it was only mild. Cardiac failure, clinically apparent by tachycardia, cyanosis, or hepatic enlargement, occurred in most of the critically ill patients.

Incubation Period: There seemed to be some correlation between prognosis and age of the infant at onset of symptoms. The average interval from birth was 11.4 days, but those infants dying (9) or surviving but considered clinically to be critically ill (3) had shorter incubation periods (7.6 and 9 days respectively). Infants in whom skin lesions were prominent generally had longer (16.4 days) than average incubation periods and a more favorable outcome. Infants who were not critically ill had an average incubation period of 14.6 days.

Case Data for Thirty Infants with Hospital Neonatal Infections

Case No.	Sex	Date of Birth	No. of Days After Birth to: Discharge from Nursery	Onset of Symptoms	Readmission	Signs and Symptoms	Course of Disease	Laboratory Data
1	F	10/24/56	...	...	...	Cyanosis at birth	Premature, unable to suck, convulsions; died 10/28/56 Autopsy: congenital varicosities in mitral and tricuspid valves with acute valvulitis and leukocytic vegetations; adrenal abscess with L. monocytogenes	WBC, 59,000/cu. mm.
2	M	10/24/56	4	11	13	Fever, diarrhea, petechiae, jaundice; subcutaneous lumps on back and feet	Died 11/4/56 Autopsy: acute inflammation of umbilical vein and artery with necrosis; acute peritonitis	WBC, 9,900/cu. mm.; blood culture: beta hemolytic streptococcus
3	M	10/21/56	5	12	12	Fever 38.8 C (102 F); feeding poorly	Died 11/6/56 Autopsy: navel and circumcision area infected; umbilical vein thrombosed, not infected; fibrinous meningitis	WBC, 17,600/cu. mm.; CSF: WBC, 8,550/cu. mm., with 71% polymorphonuclear cells; L. monocytogenes on umbilical blood and CSF cultures
4	F	12/10/56	3	11	12	Fever 40 C (104 F); irritable; refused to eat	Recovered slowly; discharged 1/7/57	WBC, 26,000/cu. mm.; CSF: WBC, 3,150/cu. mm., with 95% polymorphonuclear cells; L. monocytogenes on culture
5	F	9/17/57	3	4	4	Fever 39.4 C (103 F); grunting respiration; bulging fontanelle; mild jaundice	Died 9/22/57 Autopsy: Proteus meningitis; bilateral brain abscess; dilated, flabby heart	CSF: WBC, 41,000/cu. mm.; with 99% polymorphonuclear cells; Proteus species on culture
6	F	10/4/57	3	25	26	Fever 40 C (104 F); excoriation about umbilicus; erysipelas over buttock and perineum	Afebrile in 36 hr.; discharged 11/4/57	WBC, 18,200/cu. mm.; blood culture: negative after antibiotic therapy
7	F	10/27/57	5	21	21	Fever 39.4 C (103 F); hyperirritability; abdominal distention; navel not completely healed	Afebrile in 12 hr.; discharged 11/22/57	WBC, 34,000/cu. mm.; blood culture: group D streptococci and coagulase-positive Staph. aureus
8	F	10/29/57	6	13	14	Anorexia; blood on navel; opisthotonus; abdominal distention; bulging fontanelle	Died 11/13/57 Autopsy: diffuse meningitis; subdural hematoma; pus in umbilical vein to liver; myocardial petechiae	WBC, 26,000/cu. mm.; blood and CSF culture: Pneumococcus; CSF: WBC, 300,000/cu. mm.; blood: potassium, 6.1 mEq./liter, sodium, 114 mEq./liter, chlorides, 429 mg.%
9	M	11/5/57	5	16	Outpatient	Fever 38.8 C (102 F); omphalitis and cellulitis of navel and penis; dactylitis	Recovered in 1 wk.	...
10	M	11/16/57	0(Transferred to nursery for premature at another hospital)	7(While in nursery for premature)	...	Fever; cellulitis of feet; petechiae	Recovered after stormy course	WBC, 64,000/cu. mm.; blood culture: Str. faecalis
11	M	11/18/57	2	11	12	Fever 38.8 C (102 F); erysipelas thigh; cord cauterized on 11/25/57	Afebrile in 24 hr.; discharged 12/4/57	WBC, 41,000/cu. mm.
12	F	11/20/57	3	13	18	Fever; anorexia and vomiting; abdominal distention (umbilical cellulitis); convulsions	Edema; heart murmur; GI hemorrhage; hepatomegaly; died 1/7/58 Autopsy: subdural hematoma; myocarditis with focal vasculitis; generalized vasculitis; chronic inflammation in umbilical vein	WBC, 15,500/cu. mm.; blood culture: negative after antibiotic therapy; enterococcus from navel culture; blood: potassium, 6.5 mEq./liter, sodium, 120 mEq./liter, chlorides, 468 mg.%
13	M	11/21/57	3	4	4	Fever 38.8 C (102 F); cyanosis at birth and convulsions 11/25/57; vomiting; erysipelas over abdomen	Died 11/29/57	WBC, 5,800/cu. mm. CSF: bloody
14	M	11/23/57	4	9	9	Fever; listless and cyanotic; pustules in diaper area	Cardiac failure; slow improvement; discharged	WBC, 39,000/cu. mm.; blood culture: negative after antibotic therapy; blood: potassium, 8.3 mEq/liter, sodium, 134 mEq./liter
15	M	11/25/57	6	30	Outpatient	Fever; erysipelas of right thigh	Recovered in 4 days	WBC, 31,000/cu. mm.; blood culture: negative
16	M	12/4/57	4	16	Outpatient	Secretions from cord; erythema about umbilicus; pustules over abdomen	Recovered in 4 days	Blood culture: negative
17	M	12/5/57	4	8	8	Fever 40 C (104 F); dyspnea; erythema about umbilicus	Discharged 12/16/57	WBC, 23,000/cu. mm.; blood culture: beta hemolytic streptococcus group A
18	M	12/6/57	3	11	12	Fever 38.3 C (101 F); diarrhea; anorexia	Afebrile in 12 hr.; discharged	WBC, 8,600/cu. mm.; blood culture: beta hemolytic streptococcus group A; blood: potassium, 5.6 mEq./liter
19	M	12/8/57	3	8	10	Fever 40 C (104 F); umbilical cellulitis; anorexia; vomiting; irritability	Appeared to respond at first, then died 12/22/57	WBC, 12,000/cu. mm.; blood culture: beta hemolytic streptococcus group A; blood; potassium, 5.1 mEq./liter 12/18/57, 8.5 mEq./liter 12/20/57

Case Data for Thirty Infants with Hospital Neonatal Infections (continued)

Case No.	Sex	Date of Birth	No. of Days After Birth to: Discharge from Nursery	Onset of Symptoms	Readmission	Signs and Symptoms	Course of Disease	Laboratory Data
20	M	12/ 8/57	5	11	Out-patient	Fever; irritability; umbilical erythema	Recovered in 4 days	...
21	M	12/ 8/57	5	11	Out-patient	Fever; irritability; umbilical erythema	Recovered in 4 days	...
22	M	12/ 8/57	(Transferred to nursery for premature at another hospital)	4(While in nursery for premature)	...	Fever 38.3 C (101 F); listless; anorexia; vomiting; jaundice	Afebrile in 12 hr.; well in 5 days	WBC, 7,500/cu. mm.; blood culture: negative; blood: potassium, 4 mEq./liter, serum phosphorus, 8.3 mg. %, bilirubin, 15 mg.%
23	F	12/ 9/57	4	10	Out-patient	Fever; irritability; umbilical erythema	Well in 4 days	...
24	F	12/10/57	3	7	4	Irritability; cyanosis; diarrhea; induration about umbilicus	Died 12/19/57 Autopsy: purulent umbilical vein to liver with streptococci demonstrated in pus; flabby, pale heart; endocardial thrombi; focal necrosis in liver	WBC, 32,000/cu. mm.; blood culture: beta hemolytic streptococcus group A
25	M	12/11/57	3	10	Out-patient	Fever 38.3 C (101 F); diarrhea; vomiting; umbilical irritation; pustules in diaper area	Well in 5 days	WBC, 18,300/cu. mm.
26	F	12/14/57	3	22	Out-patient	Dactylitis; umbilical erythema	Well in 5 days	Blood culture: negative; culture of umbilicus, enterococcus
27	F	12/14/57	4	7	Out-patient	Umbilical secretions; irritability; listless; abdominal pustules	Well in 3 days	Blood culture: coagulase-positive Staph. aureus
28	M	12/15/57	6	11	Out-patient	Fever 38.8 C (102 F); irritability; umbilical secretions	Apparently well in 2 days; returned at 26 days of age with fever; appeared to respond but died 30 days of age Autopsy: large, flabby heart with myocardial petechiae	WBC, 8,250/cu. mm.; blood culture: negative; blood: potassium 8 mEq./liter 1/11/58
29	M	12/17/57	3	4	4	Listless; anorexia	Died 2 hr. after admission Autopsy: dilated, flabby heart; aspirated amniotic material	...
30	M	12/17/57	4	4	4	Listless; cyanotic; mild jaundice	Died ½ hr. after admission Autopsy: dilated, flabby heart; partly healed and edematous navel	WBC, 8,500/cu. mm.; blood culture: negative 12/20/57

Laboratory Data: An elevated white blood cell count (more than 12,000 per cubic millimeter) was present in 11 of the 17 patients for whom it was measured. Hyperkalemia (serum potassium level more than 6.4 mEq. per liter) was noted in four of the seven patients for whom this level was obtained. All four patients with conspicuous hyperkalemia were in the critically ill group.

Response to Therapy: Patients were treated with various combinations of antibiotics (including penicillin, streptomycin, chloramphenicol, and erythromycin) after ordinary tests for bacterial sensitivity were done. In addition, some infants were given, more or less on an empirical basis, sulfonamides, steroids, and supportive therapy with digitalis, blood transfusion, and gamma globulin. No one regimen appeared to be uniformly successful. Infants with skin lesions tended to recover rapidly with penicillin therapy alone, while some patients died despite intensive antibiotic therapy and after follow-up blood cultures had been sterile. Two infants (see table, cases 19 and 28) died after an apparently good initial response to therapy but with a sudden recrudescence of fever followed by circulatory collapse; the asymptomatic interval was as long as 14 days in one of these infants.

With the hope of preventing further seeding of the blood stream, ligations of the umbilical vein close to the liver were performed in two critically ill infants. This procedure, however, did not seem to be of any real benefit.

After the recognition of a sharp increase in infections, prophylaxis with either chloramphenicol or erythromycin was given to all nursery contacts with or without symptoms starting on Dec. 19, 1957. Despite this, two infants died suddenly two and one-half days after institution of therapy with large doses of chloramphenicol. They had no unusual symptoms until a few hours before death.

Pathological Observations.—Eight of nine infants who died in the 1957-1958 outbreak were examined post mortem. It was noted most consistently that in seven of these eight there was conspicuous dilatation of both right and left sides of the heart, with soft and flabby myocardia in many instances accompanied by petechial hemorrhages. In the patient in case 12 there was an actual myocarditis in association with focal vasculitis which was part of a generalized picture resembling periarteritis nodosa in older subjects (fig. 2). The infant in case 24 had small endocardial thrombi between the papillary bundles and that in case 19 a slight chronic peri-

carditis. In the remaining five cases there was no evidence of gross or microscopic myocardial changes. In addition to a flabby heart in the patient in case 29, there was evidence of aspirated amniotic

TABLE 2.—*Clinical Manifestations and Symptoms in Twenty-six Infants During Outbreak of Hospital Neonatal Infections*

	Cases, No.
Male infants	16
Premature infants	2
Symptoms	
Fever (>37.7 C [99.8 F])	19
"Change" in infant (anorexia, listlessness, irritability)	17
Omphalitis (periumbilical erythema, moist or indurated umbilicus)	17
Skin lesions (erysipelas, pustules, cellulitis, or petechiae)	12
Respiratory signs (cyanosis or dyspnea)	7
Cardiac failure	7
Neurological signs (full fontanelle or convulsions)	4
Jaundice	2

contents; the infant in case 24 also had multiple areas of acute focal hepatic necrosis with early suppuration.

Of the seven patients in whom the brain was examined, four (cases 5, 8, 12, and 19) showed evidence of hemorrhage within the substance of the brain. In two (cases 5 and 8) there was also superimposed meningitis.

At the time of autopsy, four infants had no gross evidence of umbilical infection, whereas the other four had evidences of residual inflammation. The ligamentum teres was sectioned and examined in six; in all but one (case 29) inflammatory changes were found. These changes varied from minimal to massive suppuration which was found to contain streptococci on direct smears (fig. 3). In summary,

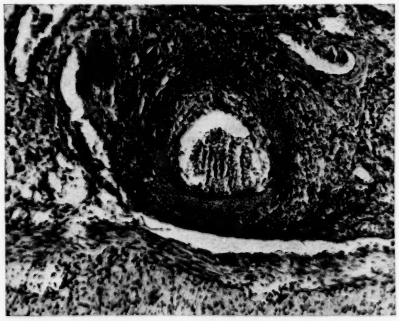

Fig. 2 (case 12).—Focal vasculitis found at autopsy.

six of eight infants presented either gross or microscopic evidences of umbilical infection in or about the umbilical vein. Thus, there seems little doubt that this structure was a likely or common portal of entry for the lethal infection.

Investigation of 1957 Outbreak

In view of the developing epidemic situation, delivery services were closed on Dec. 19, 1957, and the 36 babies remaining in the nursery were transferred to their mothers' rooms until discharge. Investigations were instituted by the hospital administration and medical staff. On Dec. 22, aid was requested from Dr. John Bruce, epidemiologist, the Louisiana State Department of Health, and from the U. S. Public Health Service.

Nursery Procedures.—Masks and gowns were worn by all personnel. On admission, infants were bathed with water to remove the vernix; sometimes oil was used if the vernix was particularly adherent. Thereafter, the infant was sponged daily with sterile water and wiped with oil if it was felt necessary. Nothing was applied to the cord except a 70% alcohol solution. If the cord appeared to be separating, it was covered with sterile gauze. After the cord separated the umbilical area was sometimes

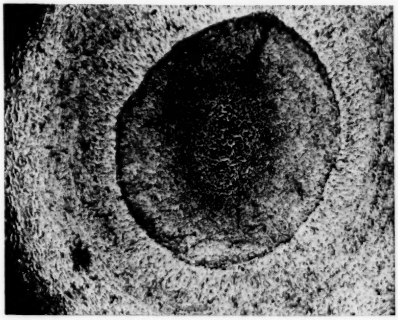

Fig. 3 (case 24).—Section of ligamentum teres with suppuration of umbilical vein.

swabbed with thimerosal (Merthiolate) and covered with sterile gauze. Circumcisions were performed in an adjacent delivery room.

Bacteriology.—Group A streptococci were the predominant organisms among infected infants during the explosive phase of the outbreak. However, babies were not infected by a common organism, for cultures from various sources yielded several different organisms over a four-month period. These included group A beta hemolytic streptococci, group D streptococci, hemolytic coagulase-positive staphylococci, pneumococci, and Proteus species.

When the obstetrics services were closed, 10 navel cultures were taken from asymptomatic infants still in the nursery. One of these yielded group D alpha streptococci, one group D beta streptococci, and one coagulase-positive staphylococci. Throat cultures were taken from all personnel of the nursery, postpartal floor, and delivery room. In the 60

persons tested, seven cultures were positive for beta hemolytic streptococci, five group A streptococci (all from nursery personnel) and two group B streptococci. None of these carriers were sick. In addition, cultures were done in 57 of the pediatricians, obstetricians, and general practitioners on the hospital staff. Five yielded beta hemolytic group B streptococci. (All cultures were screened either at the hospital laboratory or at the Louisiana State Department of Health laboratory [through the courtesy of Dr. George H. Hauser]. The beta hemolytic streptococci isolated were then sent to Chamblee, Ga., for typing by Dr. Elaine Updyke of the U. S. Public Health Service. The five group A streptococci isolated from nursery personnel were lost in transit, so their identification is based only on bacitracin tests done at our hospital laboratory. None of the group A streptococci could be typed by the serums presently available.)

Numerous fomites were also cultured, including all fluids used in the care of infants, and dust, gauze, diapers, cord clamps, and formulas. In addition, blood agar plates were exposed to nursery air overnight, and none of these cultures yielded streptococci, although coagulase-negative Staphylococcus pyogenes var. aureus was isolated from a stock supply of baby oil.

For comparison, throat cultures were taken from similar hospital employees at the city's other general hospital along with cord cultures from its newborn infants. Of 24 cords from which cultures were taken, none yielded streptococci but three yielded coagulase-positive staphylococci, phage type 44A. Of the 76 throat cultures taken from personnel, 7 had beta hemolytic streptococci, 5 group B, 1 group A, and 1 group D.

Records were reviewed to see if the ill infants had been cared for by delivery room personnel or had been received or handled in the nursery by personnel common to two services. No such correlations were possible.

Recommendations

As a result of the investigations carried on by our hospital staff, administration, and consulting epidemiologists, several changes were made in the nursery and obstetrics facilities, as well as in the procedures followed.

The nursery area was enlarged to 1,200 sq. ft. so that 50 babies could adequately be accommodated. This area was subdivided into four units, including one "observation" and one "suspect" nursery. A full-time supervisor was appointed to oversee both the obstetrics department and the nursery. It was agreed that when peak capacity of the nursery had been reached, the chief of service of the nursery would be empowered to close the nursery to further admissions. In addition, a permanent committee from the medical staff was set up to investigate all neonatal and puerperal infections.

A permanent nursery isolation unit was established in a separate area and a treatment room provided in the remodeled nursery for circumcisions and other minor procedures. Several changes were also made in the obstetrics unit, including construction of a separate room for delivery of patients suspected of having infection.

Comment

The striking common factor in both nursery outbreaks was overcrowding. The 1956 outbreak took place during a period when the census was relatively high and the nursery area temporarily reduced. The 1957 outbreak occurred again during a time when the nursery census was near a peak. It is, of course, difficult to control this census, since patients in labor often have emergency admissions, and it is true that there are seasonal variations. The nursery area, which was adequate in 1951, proved to be inadequate in 1957. This serious matter of nursery overcrowding could be alleviated if hospital planners and architects were required to maintain a fixed ratio of bassinets to postpartum beds with an excess in the nursery area (based on the recommendation of the American Academy of Pediatrics of a minimum of 24 sq. ft. per bassinet). Adherence to such a fixed ratio would eliminate the nursery overcrowding which plagues so many hospitals at peak seasons.

Although two organisms were isolated in the 1956 outbreak, L. monocytogenes was implicated in three of the four patients. Specificity of infection, with one developing six weeks after the first infection, indicates the possibility that a contaminated fomes or carrier among nursery personnel was responsible for secondary cases. Unfortunately, medical staff organization was such that no group or individual assumed authority to carry out a thorough investigation of this outbreak, and, therefore, no adequate immediate protective steps were taken. Later a committee from the medical staff did make certain recommendations. We believe such a permanent "watchdog" committee, responsible to investigate every neonatal and postpartal infection, is a necessary function of every hospital staff.

Since several different organisms were isolated in the 1957 outbreak, it seems doubtful that single specific fomites or carriers could be implicated. Overcrowding, with increased possibilities for errors in nursery techniques, seems to be a more plausible explanation. Streptococci (at least three types) were the predominant organisms isolated. Bacteriological investigation revealed group A streptococci in throat cultures from five workers in the nursery and group D streptococci in umbilical cord cultures from two asymptomatic infants in the nursery. Cultures from throats of personnel and from umbilical cords of neonates in another similar community hospital in the area at the same time revealed a

lower, although not statistically significant, percentage of beta hemolytic streptococci among the personnel and none from the infants. However, group A streptococci were recovered from a higher proportion of nursery personnel in the hospital experiencing the outbreak. Once streptococci were introduced into the nursery, the infection could have been passed from one infant to another and even to nursery personnel, as has been reported in two outbreaks in England,[1] where the nursery was suggested as the source of infection.

The most common symptom in the 1957 outbreak was a change in the infant, i. e., anorexia, apathy, or irritability. Smith and co-workers [2] have pointed out that the most common symptom in neonatal sepsis is "failure to do well." Omphalitis occurred in several of these patients, and it has been noted by others that omphalitis is frequently found in streptococcic neonatal sepsis.[3] Jaundice, which was not a notable symptom, has been noted to occur only rarely in neonatal streptococcic infection.[4]

The frequency of cardiac failure and myocardosis, particularly in the fatal cases, leads to some speculation. Reports do not mention myocardial disease as a common feature in neonatal sepsis. In Dunham's review [4] of 15 cases of streptococcic septicemia during the newborn period, cardiac failure was not a predominant symptom; autopsy was done in five infants in that series, but no mention of abnormality of the myocardium was made. The sudden collapse of some infants in our 1957 outbreak was presumably due to cardiac failure. This clinical picture resembled the neonatal myocarditis due to Coxsackie virus.[5] Recrudescence of symptoms similar to that observed in two of our patients who died has been noted in some of these reports. During this outbreak, there was an unusually extensive epidemic of gastroenteritis among children and adults in the community; this was probably viral in origin. Consideration has been given to the possibility that the cardiac failure and poor response of some of these patients to antibiotic therapy or prophylaxis ensued as a result of a symbiotic relationship between streptococcosis and an unrecognized viral infection. In this connection, Pearce [6] has demonstrated that a virus which infrequently causes a mild myocarditis in rabbits produces a severe and frequent myocarditis in rabbits if it is preceded by an intravenous injection of a Streptococcus pyogenes toxin. No viral studies were done for patients who died in this outbreak, because attention was directed to the bacterial septicemia initially. Stools of two infants (see table, cases 10 and 14) who were critically ill but recovered were passed through monkey kidney tissue, but no cytopathogenic agent was isolated. However, these stools were not collected until six and seven weeks after the acute illness, and it would be unusual to demonstrate Coxsackie virus from this source at such a late date. Focal cellular infiltrates in the myocardium have been described in viral neonatal myocarditis [5a] and also in fatal cases of hemolytic streptococcic infection.[7] Postmortem examination revealed hearts that were grossly dilated and flabby, but microscopic examination disclosed no patchy cellular infiltrations. Mallory and Keefer have pointed out that patients with fulminating streptococcic infections often have organisms present in the cardiac tissue, with practically no cellular reaction. Such cardiac changes have also been reported in connection with toxic reactions to antistreptolysn O in animal experiments.

The failure of some of these patients to respond to antibiotics used therapeutically or prophylactically again points up the false sense of security that antibiotics now impart.[8] The "masking effect" of antibiotics was also notable; not a single blood culture was positive when the patient had received prior antibiotic therapy.

The increasing frequency with which nosocomial staphylococcic infections are being reported points up the desirability of "rooming in," smaller nursery units, or prompt discharge after postpartal recovery. The high incidence of umbilical infections in the 1957 outbreak reemphasizes the dangers of the cord as a reservoir of infection.[9] The usual care of the cord with dry technique and no dressing should probably be reexamined. Consideration should be given to the use of dressings and daily application of antiseptics to the cord and surrounding skin in order to reduce its infectivity.

Summary

In one outbreak of neonatal infection in a nursery, the predominant organism was Listeria monocytogenes; in the second, more extensive outbreak, a variety of organisms, but predominantly group A streptococci, were recovered.

Both outbreaks were associated with overcrowding, and investigations revealed no other correlations. In both instances the umbilicus appeared to be a likely portal of entry for infection. The most consistent observation at autopsy in the 1957 outbreak was myocardial involvement. These epidemics again reveal the danger of nursery overcrowding with possible subsequent breakdown in rigid aseptic techniques.

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LITHOGRAPHER'S DERMATITIS

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In a study of the cause and prevention of dermatitis occurring among lithographers, 100 men representing all job categories within the industry were examined, and 76 men with active eruptions at the time or in the past were compared with 24 men free from dermatitis. The data indicated that the most important chemical substances concerned were compounds of chromium but that defatting of the skin (by soaps and lipid solvents), trauma, and contact with acids and alkalies render the skin more susceptible to the action of primary irritants and allergenic agents. The use of mechanical protection of the hands interferes with delicate manipulations, and protective ointments interfere with the surface phenomena on which lithographing depends. Fundamental changes in procedure may be necessary in order to reduce the incidence of disability in this industry.

Dermatitis is an important occupational hazard of lithographers,[1] affecting from 5 to 10% of the 30,000 workers in the industry. It is the cause of substantial economic loss because the affected persons may be unable to work and replacements require long training periods. Occupational dermatoses occurring in lithographers have been commonly termed "chromate dermatitis" and are ascribed to allergic sensitization to this agent, since chromate, a known sensitizer, is contacted in many phases of the lithographing process. In the present investigation a survey of the lithographing industry was carried out to attempt to ascertain the specific materials and processes which are the true causes of this occupational disease. A dermatological study was made of patients with dermatitis ascribed to occupational causes ("chromate dermatitis") in which materials contacted at work were used for patch tests. The long-term goal of this project was to develop methods of prevention and/or control of dermatitis among lithographers.

Survey of the Industry

Modern lithography is the process by which colored photographic pictures can be reproduced on high-speed printing presses. The "deep-etch" process, that most commonly used in the industry today, is performed as follows: The material to be reproduced is photographed, and positive transparencies are made. A "grained" metal plate (one with the surface roughened by abrasive treatment) is coated with chromated albumen by the platemaker. The positive photographic films are arranged on the plate in their proper position and sequence by the "stripper." This prepared plate with the film superimposed is then exposed to a

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carbon arc-light, as is done with ordinary contact prints in photography. Since chromated albumen is sensitive to light, the photographic image is transferred to the prepared plate surface. This image is etched or fixed to the plate with a mixture of gum arabic, chromic acid, and phosphoric acid. The plate is then washed with water, which completely removes the chromated albumen from all unfixed areas leaving only the image area available for receiving the ink. This prepared plate is then consigned to the pressmen and feeders who ink the plate and complete the mechanical phases of the process in which the fixed image is transferred by the high-speed press from the plate to paper.

In the course of this complex process the pressmen and feeders must handle kerosene; turpentine; a turpentine substitute containing pine oil, castor oil, ester gum, and naphtha (Lithotine); phosphoric, chromic, and hydrochloric acids; gum arabic; potassium and ammonium dichromate; benzene; inks; asphaltum; and varnish remover. The platemakers must handle a preparation used to convert the surface of the zinc plate to an oxidation-resistant film and which contains sodium or ammonium dichromate, sulfuric acid, and water (Cronak); albumen; deep-etch coat (a preparation used to dissolve a small amount of metal in the image areas to make them ink-receptive which contains calcium chloride, ferric chloride, hydrochloric acid, and water); white etch (a solution of ammonium nitrate, ammonium phosphate, hydrofluoric acid, gum arabic, and water); ammonia water; and lacquer.

The strippers must handle film developer, "hypo," etch, carbon tetrachloride, dichromates, and acetic acid. Materials for patch testing were selected from this list of contactants, some of which are known sensitizers or primary irritants.

Dermatological Study of Industrial Workers

One hundred men representing all job categories in the lithographing industry were examined. Some of them had had previous episodes of dermatitis, usually of the hands; others had active eruptions at the time of examination; and 24 were normal controls. Dermatological examination, cultures for fungi of scaling lesions of the hands and patch tests with materials listed in the table were carried out in all cases. A clinical diagnosis of contact dermatitis of the hands was made in 60 of the 76 patients who were considered to have occupational disease. On patch testing, 47 (78.3%) of the patients with contact dermatitis exhibited positive reactions to one or more of the occupational contactants used in the test program, while only 16 of 40 subjects (40%) with diagnoses other than contact dermatitis showed positive reactions. The table lists the materials used in testing and the distribution of positive patch test reactions in the two groups.

Of 60 patients with contact dermatitis, 40 had hyperhidrosis of the hands and feet. Of 40 subjects without contact dermatitis, 19 had hyperhidrosis. The difference in incidence of excessive sweating between the two groups is probably not statistically significant. Positive fungus cultures were obtained in 10 of the cases of contact dermatitis (Candida albicans, 5; Trichophyton mentagrophytes, 4; Epidermophyton floccosum, 1). In the non-contact-dermatitis group, no positive cultures were obtained. Fungus infections may therefore represent a minor predisposing factor in lithographer's dermatitis; or conversely, patients with hand dermatitis may be more susceptible to fungus infections.

Results of Patch Tests

	Solution			Reactions, No.		
No.	Substance	Concentration, %	Diluent	Contact Dermatitis	Noncontact Dermatitis	Positive Reactions, No.
1	Lacquer (Albulac)	...	...	2	1	3
2	Machine oil	50	Olive oil	1	0	1
3	Benzine	60	Olive oil	1	0	1
4	Roller wash	50	Olive oil	1	0	1
5	Type wash 1	50	Olive oil	1	0	1
6	Lith-Kem-Kote					
	A. Undiluted		...	47	11	58
	B. Half-strength		Olive oil	12	3	15
	C. Quarter-strength		Olive oil	6	0	6
7	Type wash 2	50	Olive oil	4	0	4
8	Formic acid	1	Aqueous	2	0	2
9	Bichromated albumin	1	Aqueous	2	2	4
10	Ethylene glycol (Cellosolve)	Undiluted	...	3	2	5
11	Carbon disulphide	60	Olive oil	1	0	1
12	Potassium ferricyanide	10	Aqueous	1	0	1
13	Potassium ferrocyanide	10	Aqueous	5	0	5
14	Fountain etch	Undiluted	...	18	5	23
15	Turpentine	50	Olive oil	9	4	13
16	Potassium dichromate	1	Aqueous	17	2	19
17	Cobaltous nitrate	2	Aqueous	6	1	7
18	Kerosene	50	Olive oil	7	2	9
19	Nickelous nitrate	5	Aqueous	9	1	10
20	Chromic acid	0.5	Aqueous	20	8	28
21	Turpentine substitute (Lithotine)	50	Olive oil	6	3	9

Comment

The tabulated results indicate that the dermatitis found in 60% of this group is an occupational contact dermatitis in which the most important agent is hexavalent chromium, present as the dichromate. Pressmen and platemakers, who comprise over 75% of the patients with contact dermatitis of the hands, have the maximum exposure to dichromate. Positive patch tests to solutions containing chromium (numbers 6, 14, 16, and 20 in the table) occurred from two to eight times as often in patients with contact dermatitis as in those without. Altogether, there were four times as many positive patch test reactions to all the industrial contactants in the subjects with contact dermatitis as in the controls and in those with other dermatoses.

Positive dichromate patch test reactions have been reported in patients with eczematous dermatitis caused by other agents. Klauder [2] showed that 13 of 18 patients with diffuse eczematous dermatitis without evidence of contactant cause showed positive reactions to a 0.5% dichromate solution. Similarly, Rostenberg and Sulzberger [3] found positive patch tests with 0.5% to 1% solutions of dichromate in 12% of a miscellaneous group of dermatological patients, with and without contact dermatitis. Some of these reactions can be explained on the basis of nonspecific polyvalent hypersensitivity due to increased irritability of the skin of patients with eczematous dermatitis. This nonspecific reactivity usually disappears after the acute dermatitis has subsided; it must be differentiated from a true specific (allergic) hypersensitivity, which is based on immunological mechanisms. How many of the positive reactors in the present series belong to the former category could not be determined.

If dichromate sensitization is the major cause of dermatitis in lithographers, it would be reasonable to expect in the group with contact dermatitis a higher percentage of positive reactors with test substances 14, 16, and 20. As it was, there were only 17 positive reactions to 1% potassium dichromate. Conversely, it is necessary to explain the fairly numerous positive patch tests with various substances in the noncontact dermatitis group. It may be that the positive reactions in these cases indicate subclinical levels of allergic sensitivity. Possibly the recommended testing concentrations such as 0.5% potassium dichromate and 0.5% chromic acid, are high enough to cause reactions on the basis of direct "primary irritancy" in some individuals when applied under an occlusive patch for prolonged periods. The concentration to use in testing with dichromate is probably less than 0.5%; otherwise reactions may develop on the basis of direct irritancy and erroneously be attributed to sensitization. The importance, for patch-testing purposes, of the proper dilution of possible irritants is further demonstrated by the reactions to Lith-Kem-Kote (dichromate, phosphoric, and hydrochloric acids, and casein). Here, dilution to half-strength reduced the number of reactions from 58 to 13 and dilution to quarter-strength reduced them to 6. Thus the finding of a positive patch test is not necessarily indicative of sensitization.

Exposure to lipid solvents is frequent among pressmen, who also show the highest incidence of dermatitis. To determine the role of defatting agents as causative factors in the production of sensitization dermatitis animal experiments were carried out, comparing sensitization rates to contact with dichromate, with and without preliminary application of solvent to the skin. Twenty-four guinea pigs were used in the study. In one group of 12, 1% potassium dichromate solution was applied to a thoracic clipped skin site every other day for five times. Ten days after the last application the animals were challenged with the same solution, with no reactions. The procedure was repeated in the same group, and again no eczematous dermatitis was elicited. The second group of 12 guinea pigs was tested in the same way, except that before each application of 1% potassium dichromate solution the skin site was defatted by vigorous swabbing with petroleum ether. When examined after the 10-day waiting period, 6 of the 12 animals showed reactions ranging from 1+ to 4+ in intensity, with the test solution diluted to as low as 0.05%. From these results, it seems clear that there is a synergistic effect of defatting agents with chromate in the development of an allergic eczematous contact-type dermatitis.

It can be concluded that occupational dermatitis is caused by a complex of factors but that there is a single pattern of pathogenesis. Defatting of the skin, trauma, and contact with acids and alkalies are of importance in facilitating penetration of the allergenic agent, which in many cases is the chromate ion. For example, in the work of pressmen and feeders the sharp-edged photographic plate is handled many times in the course of setting it for the press, and minor injuries to the skin are frequent. The surface of the plate is sponged repeatedly with "fountain etch," which contains dichromate in dilute acid solution. At this time these workers usually wash their hands with soap and water, which has the combined effect of defatting, drying, and alkalinizing the skin. Then removal of ink from the rollers, the part of the printing press which applies ink to the plate, and the rubber blanket, the part of the printing press which receives the imprint from the inked plate and transfers this image to paper as the final step in the lithographing process, is carried out by hand, with use of a cloth saturated with solvents such as turpentine, benzine, or Lithotine. The worker then washes again with soap and water, and the cycle is started anew. It may be repeated as many as six times a day.

While the pressman has his hands in and out of water and solvents all day, the platemaker uses practically no solvents at all in his work. This circumstance could explain the higher incidence of contact dermatitis in pressmen (53% of this series with contact dermatitis) as compared to platemakers (23%), as well as the fact that it took on the average only 5 years for contact dermatitis to develop in pressmen as compared to an average of 15 years in platemakers. The combination of physical trauma, defatting the skin, drying, and intermittent acidification and alkalinization, followed by exposure to a sensitizer or irritant such as ammonium dichromate, induced the typical dermatological reactions seen in lithographers.

Protective creams of all types have been tried in the industry for years with little or no success. A protective cream may be effective against either oily or aqueous agents but not against both. Lithographers may use fat solvents (benzene or turpentine) and aqueous irritants in consecutive operations. It is likely that at some step in the process the protective coating will be rendered soluble. Mechanical removal may also interfere with the continuous maintenance of a coating of the protective ointment. This same objection can be raised on theoretical grounds to the topical use of chelating agents, regardless of the type of vehicle employed. Even if chromates could be chelated and eliminated as a sensitizing factor, other agents, particularly the solvents, might produce dermatitis on a primary irritant basis. Preliminary trials with a protective cream containing edathamil (ethylenediaminetetra-acetic acid) and a reducing agent failed to demonstrate protection in any of the subjects used.

Suggestions for Minimizing Dermatitis Among Lithographers

The prevention of dermatitis among lithographers is difficult to achieve. Complete protection of the hands with rubber gloves would be desirable, but the handling of materials is thereby rendered cumbersome, as when protective creams are used. Furthermore, aside from the difficulties of repeated applications of ointment, grease on the hands is undesirable because it is likely to be transferred to the plate where it will interfere with the printing process. Thus no simple or complete solution of the problem is likely because of factors inherent in the lithographing procedure.

At present, because of the persistent nature of the dermatitis, it must be recommended that any worker showing evidence of cutaneous disease related to his occupation be transferred to some other job category. "Prophetic" patch tests cannot be of real value in advance in eliminating the predisposed worker from a job, since prolonged contact is required before sensitization is engendered.[4] In addition, the prophetic patch tests cannot reproduce the complex conditions of actual exposure as described. It is probable, however, that some control of lithographers dermatitis can be effected through the following measures: (1) safety engineering procedures, to minimize contact with known hazardous chemical agents such as chromate, acids, or turpentine; (2) research toward the development of nonirritant, nonsensitizing materials to replace those with known undesirable dermatological properties; and (3) further research into the possibility of repelling, neutralizing, or separating chromate which comes in contact with the skin.

Summary

Contact dermatitis among lithographers is an important industrial problem. Fat solvents and primary irritants are factors contributory to the pathogenesis of sensitization to chromate, the most common allergen. Future investigative work should be directed toward methods of minimizing, both for the employee and in the industry, the factors which are operative in the production of this disabling disease.

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EXERCISE TOLERANCE.—Artificial restrictions should not be placed on the physical activity of patients who already have symptoms of coronary disease, and, within reason, the patient should be allowed to decide his own level of exercise tolerance. In this way a better coronary collateral circulation might be encouraged, and, in theory at least, the extent of a further myocardial infarct might be limited. The rest of us in sedentary occupations should endeavor to take more exercise regularly, although sudden and violent exertion is probably undesirable, particularly in middle age. Studies of the protective action of leisure activities are now indicated. Meanwhile some good might be done by walking part or all of the way to work and by being less dependent on cars, buses, and lifts. The active in mind should make time to remain active in body.—Physical Activity and Coronary Disease, Editorial, *British Medical Journal*, Dec. 20, 1958.

TO DO OR NOT TO DO A CESAREAN SECTION

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During a period of 21 years, in an institution where 40,423 deliveries were performed, there were 4,397 cesarean sections. The maternal mortality for these was 0.081% as compared with 0.052% for vaginal deliveries, and in the series of 1,826 elective repeat cesarean sections the maternal mortality was zero. Dictums expressing fear of this operation generally ignore recent improvements in anesthesia, surgery, and obstetrics. There has been too much emphasis on the frequency of cesarean sections in various hospitals as the chief test of obstetrical conservatism. The frequency of maternal and fetal deaths is the more reliable test, and the ideal should be a perfect end-result for both baby and mother. This should include preservation of vaginal functions, which are too often deranged seriously by the tears, infections, and other trauma of vaginal deliveries. Close attention to indications and technique of cesarean section should increase the percentage of pregnancies that terminate happily for all.

To do or not to do a cesarean section: this is the question which is posed with varying frequency to all obstetricians. The decision must be based on an entirely new set of standards; the old ones are no longer tenable. Our goal is a perfect end-result for both mother and baby.

As Eastman [1] has stated, "The transcendent objective of obstetrics is that every pregnancy culminate in a healthy mother and a healthy baby. It strives to reduce to a very minimum the number of women and infants who die as a result of the reproductive process or who are left injured therefrom. It aims further to minimize the discomforts of pregnancy, labor and the puerperium; and, at the same time, so to safeguard and ease the whole course that both mother and child will conclude the experience in a healthy state, both physically and mentally."

Maternal and Perinatal Mortality

The statistics quoted in this paper are taken from the Cedars of Lebanon Hospital, Los Angeles. The opinions, however, are those of the authors and, in some instances, do not reflect those of other members of the staff. In 1950, one of us (J. M. H.) presented a review of 21,000 deliveries, including 2,070 consecutive cesarean sections performed at the Cedars of Lebanon Hospital in the period 1937-1950. As of April 1, 1958, covering a period of 21 years, these totals have reached 40,423 and 4,397 respectively. Included are figures from both private and clinic groups. The clinic patients represent only a small segment, as our clinic service in obstetrics is only six years old. This is probably the largest series of cesarean sections ever reported from one institution.

At this point we wish to stress that the statistics offered are not corrected in any way. The maternal statistics include all maternal deaths and are not corrected for conditions which are not related to the pregnancy or for death with remote proximity to the pregnancy. Fetal statistics include all stillbirths over 300 Gm. (⅔ lb.) in weight. Neonatal deaths include all fetuses exhibiting any vital signs at birth, regardless of weight and gestational age, congenital defect incompatible with life, Rh or ABO incompatibility, or any other factors complicating the pregnancy which could be considered responsible for fetal death. Table 1 presents these figures with the associated maternal mortality.

Table 2 presents an analysis of the associated perinatal deaths over a selected period from 1952 to 1955. These were chosen due to the fact that, beginning with 1952, one of us (J. A. N.) has begun a comprehensive analysis of the fetal mortality, which will be presented in detail in a later publication.

Figures from the U. S. Department of Vital Statistics show that there has been a significant consistent decrease in maternal mortality throughout the United States over the past 21 years. There has also been a moderate decrease in the perinatal mortality, which does not seem to have kept step with the maternal mortality. We realize that these statistics cover deliveries made under all types of conditions and in all parts of the United States, including rural districts as well as the populated areas. We feel, however, that, along with the other

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important conditions to be mentioned later, the judicious and increased use of cesarean section has been a large factor in improving these statistics.

This presentation is concerned with the analysis of the statistics derived from our entire series and particularly from the most recent portion, the

TABLE 1.—*Maternal Mortality, July 31, 1937, to April 1, 1958*

Delivery	Total No. of Cases	Deaths	
		No.	%
Vaginal	36,026	19	0.052
Cesarean section	4,397	4	0.091
Total	40,423	23	0.059

thoughts aroused by this analysis, the technique which has been used, and inferences which we feel should affect the decision whenever cesarean section is considered.

Incidence of Cesarean Section

Elective repeat cesarean section was done 1,826 times, with a maternal mortality of 0 and a perinatal mortality of 1.7%. Our figures show the almost complete safety with which cesarean section can be performed when there are no complicating factors and when the conditions and advantages of a fine hospital and a trained staff are available. The operation per se can be considered an almost innocuous procedure as far as the maternal mortality is concerned. We feel that our small perinatal mortality can be lowered with more accurate diagnosis of the due date and with more gentle delivery of the baby, both of which factors will be discussed more fully later in this paper.

Along with technical skill, the utmost skill in judgment is of paramount importance. This judgment must be employed in evaluating each situation and, most particularly, in timing. Procrastination, rather than improper selection of candidates, has too often been the determining factor behind the neglected cases for which mortality figures have been so high. It is indeed unfortunate that our teaching institutions and some textbooks have emphasized instruction in the technique of vaginal delivery without emphasizing the role of cesarean section in the obstetrician's armamentarium. The impression has been given that cesarean section is a dangerous modality which should be employed only as a last resort. Some obstetricians, well trained in the art of manipulation, feel it a tribute to their personal competence when they accomplish difficult delivery of a baby even when the risks are considerable. Many times, having to resort to a cesarean section carries a stigma of defeat. But how many times do these doctors then experience regret? Practitioners of lesser training and ability also face difficult obstetric situations at times. These men should be taught to recognize the proper indications for the procedure so that their patients will receive the best method of treatment available. We feel sure that this can be accomplished if the contraindications for the operation receive less stress and the dangers of manipulative techniques are emphasized.

As Plant [2] has pointed out, we can understand why the efficiency of an obstetrics service was judged by the lowness of its cesarean section rate when we remember that maternal mortality for this operation was 85% prior to 1865 and was still as high as 10% by 1934. Some authors, today, still plead for a reduction in the rate of cesarean section because of results reported in a recent review of the world literature which still show a high maternal and fetal mortality. Of 19,251 sections performed throughout the world between 1939 and 1953, the maternal death rate was 1.79%. Belonoschkin,[3] who analyzed this world series and then compared the figures with those of his own country for 1952-1953, reported that, of 2,713 sections performed in Sweden with a cesarean section rate of 1.2%, the maternal mortality was 1.3% and the fetal mortality was as high as 7%. It is not hard to understand the reasons for this high maternal and fetal mortality when we consider the low incidence of the operation.

We strongly urge that cesarean section be freed from the burden of fear which has for so long been attached to its performance. There is no sound reason to cling to antiquated dicta which date from the era when modern hospital facilities were not available and abdominal surgery was considered dangerous.

Cesarean section has been singled out as a dangerous operation above other, far more difficult, procedures in the surgical field. The senior author takes issue with the discriminatory regulation which makes mandatory a consultation before the performance of cesarean section. He does not disagree with its purpose, but he disagrees when this rule applies only to obstetricians, for it then reflects on their integrity and craftsmanship as a group. Were the regulation made to apply to all surgical procedures, there would be no fault to find. The modern ob-

TABLE 2.—*Perinatal Deaths, 1952-1955*

	Delivery		
	Cesarean Section	Vaginal	Total
Live births, no.	1,153	8,253	9,406
Neonatal deaths, %	2.25	1.27	1.39
Stillbirths, %	1.04	1.16	1.15
Perinatal deaths, %	3.29	2.43	2.54

stetrician is no longer just a midwife. His training is equal to that in any of the other surgical specialties.

In order to conform with this regulation, and in an attempt to reduce the incidence of cesarean section at Cedars of Lebanon Hospital, a cesarean committee was formed. Whenever an attending man has a case in which difficulty is expected at the

time of delivery, and in all cases of repeat cesarean section, the case in point is reviewed thoroughly and recommendations are made. In an emergency cesarean section, a member of this committee must be called in consultation before the operation is permitted.

Incidence has become a red flag in the present controversy. Twenty years ago a section rate of 2% was considered high. As knowledge and statistics improved, the accepted incidence rose to 5 or 6%, which is now the standard for many private institutions. A great part of the rising rate of cesarean section in the United States can be attributed to the fact that a previous section is almost always an indication for a repeat section. It is our belief that incidence in itself is not important, since our ultimate goal is the attainment of ideal results.

Techniques

As incidence has increased, we find also better-trained hospital staffs, more hospitalization, better prenatal care, and a greater realization and understanding of the problems which may confront us. We have available to us all those facilities which can be found in every fine institution. These include adequate nursing service and the availability of blood and antibiotics. There are other conditions, however, under which cesarean sections are performed at our hospital, which have helped to improve our results. A fully equipped room is reserved on the obstetrics floor for performance exclusively of cesarean sections. The services of qualified anesthetists are available on the delivery floor 24 hours a day. Regional block has been the anesthetic procedure of choice almost without exception. On our service, it carries no greater risk to the mother than any other method and provides much greater protection for the baby.

Liberal medical and surgical consultation is employed in cases in which there are any complications. Every baby delivered by cesarean section is seen immediately by a pediatrician present in the delivery room. Rarely does the need arise to perform section when the patient's general condition has attained such a poor state as to make the procedure dangerous. In the elective repeat group, the amount of premedication administered is almost nil. With the exception of seven cases, all of the sections performed at our hospital during the last eight years were of the low cervical type. A modified Pfannenstiel's incision was most frequently employed.

Our technique deserves description. In the analysis of the fetal mortality in the early series, we found an inordinate incidence of rupture of the falx cerebri and tentorium cerebelli with resulting cerebral hemorrhage. This was reminiscent of the pathology found in fetal death associated with breech delivery and due in great part to traction, especially when the head was not kept well flexed. D'Esopo [4] has presented an excellent description of the management of breech delivery. The same precautions must be applied to delivery of the child from the uterine abdominal incision.

The exposure should be adequate, the baby's head freed from the pelvis, if impacted, before the uterus is incised, and a transverse low cervical elliptical uterine incision employed. The head is delivered with gentleness and care, with the hand used as a vector in the "shoehorn maneuver." There should be no traction on the baby's neck. The delivery should be effected chiefly by guiding the shoulders through the incision with the head kept well flexed while pressure is exerted on the fundus by the assistant. The baby is then handed to the pediatrician, and, should resuscitation be necessary, it is accomplished with as little shock as possible. When the baby is breathing well, the stomach is aspirated and lavaged and the baby is placed in a warm bed. The exercise of these conditions and techniques is important in producing a successful termination of the pregnancy.

Value of Cesarean Section

Fetal indications are gaining increasing importance in the rising incidence of cesarean section. By the more frequent use of this procedure we feel that a reduction in fetal mortality and morbidity can be accomplished. We find that no amount of medical attention or cost is spared an already living child who develops a serious condition, yet the life of the unborn infant seems rarely valued as highly. We cannot become callous about the traumatic psychological experience which parents endure at the loss of a child during delivery. This is a problem which the obstetrician must regard with deep concern.

For an isolated example of this problem, we cite Townsend [5] who advocated conservative treatment of abruptio placentae in a recent article. In his summary, he describes 73 cases, in 10 of which fetal death might have been prevented by cesarean section. We are forced to ask "What price is a newborn life?" Although his incidence of cesarean section would have been raised, how much better to have performed 73 cesarean sections and saved 10 lives!

While we do not suggest abdominal delivery as the solution for all obstetric difficulties, we wish to reemphasize the advantages of cesarean section where there is any doubt as to a successful outcome. Although the lifesaving value of cesarean section is no longer questioned, the factor of morbidity, both maternal and fetal, is frequently overlooked. Our aim should be the eventual elimination of all traumatic deliveries. With the welfare of the patient and her family as our foremost consideration, let us take another look at the advantage of cesarean section over difficult or complicated vaginal procedures. It must now be conceded that cesarean section provides a safe and easy substitute for those manipulative procedures which have so often re-

sulted in damage to the mother and child. In 1945, Irving [6] compared the results of mid-forceps delivery with cesarean section and demonstrated that mid-forceps deliveries were equally as dangerous for the mother and eight times as dangerous for the baby.

Gold and co-workers,[7] comparing the relative dangers of the various delivery procedures, found that, in New York City in 1948, 1.7 infants per 1,000 received birth injuries. The rates of injury per 1,000 live births, by type of delivery, were as follows: spontaneous, 0.21; low forceps, 1.3; cesarean section, 1.3; mid-forceps, 14.4; high forceps, 17.5; breech, 14.0; and version and extraction, 30.0.

It is important to note that, from the point of view of trauma to the baby, the incidence for cesarean section and low forceps delivery is the same. Most accoucheurs will now agree that cesarean section has virtually replaced the use of Dührssen's incisions, version and extraction, high forceps, difficult mid-forceps, difficult breech extraction, and many other potentially dangerous vaginal maneuvers. In our last 9,498 cases, we found that there were 7 deaths due to birth injury of babies delivered through the vagina, giving an incidence of 0.73 per 1,000 births. We feel that the use of cesarean section has resulted in this low figure.

It is essential that the pregnancy be terminated with a live, healthy baby and the number of mentally deficient, spastic, and otherwise deformed children be decreased or, if possible, eliminated. As obstetricians, we usually terminate our care of the pregnant woman on delivery. Rarely do we have the opportunity to see what the heartbroken parents and the pediatricians, psychiatrists, and institutions for the retarded see as the end-result of our work. As Hellman [8] has pointed out, it is rare that these patients return to the obstetrician in whose hands they experienced such bad results.

Culmination of the pregnancy with minimal damage to the mother is another prime consideration. The effects of traumatic delivery on the mother can be classified into two groups: immediate and delayed. The immediate results have to do with both mental and physical outcome. Difficult vaginal deliveries many times require extensive surgical repair of torn tissues, the necessity of blood transfusion with its accompanying hazards, the possibility of infectious states, prolonged hospitalization, and unnecessary physical pain.

The importance of preserving the vagina and surrounding structures and supports from traumatic injury should not be overlooked. We frequently hear that we are losing sight of the vagina as a birth canal. It is the belief of the senior author that we must not neglect the importance of the vagina as a sex and reproductive organ. Severe lacerations can result in weakening of the vaginal vault and other supportive structures, with its associated complications, and, not infrequently, in impairment of the sexual function of the mother. In predisposed patients, such gynecologic invalidism with respect to discomfort of the patient and anxiety as to the prospect of future surgery and childbearing is of vital importance. Delayed morbidity includes that of trauma to the urethra and bladder, rectum, vagina, cervix, and even uterus. Unfortunately, the most important traumatic changes do not appear until sometimes the third but usually the fourth, fifth, or sixth decades of life. During this period women present themselves with urethroceles, cystoceles, rectoceles, prolapse, lacerated cervix, and similar conditions. We agree that not all of these conditions are caused by trauma alone, but it is undoubtedly a large factor. The handling of these complications then requires operative procedures at an age when the patient's condition is not at its optimum. How much better it is to practice prophylactic medicine when the opportunity presents itself.

Indications

In our reevaluation of the indications for cesarean section, we may state in a broad sense that it should be our purpose to preserve the integrity of the organs and functions of both mother and child. We are presenting the following criteria for reevaluation, listed in the order of frequency in our series:

Repeat Cesarean Section.—As the incidence of cesarean section has increased, the incidence of repeat cesarean section accordingly becomes a greater factor. Approximately 46% of all cesarean sections performed in our hospital from 1950 to 1958 were of the repeat type. Many of these patients had their primary procedure at another hospital. There was no maternal mortality in 1,826 consecutive repeat cesarean sections. In view of the possibility of the catastrophic results which occasionally follow rupture of the uterus, it is our opinion that the dictum of "once a section, always a section" should be adhered to. We have shown that repeat cesarean section is a comparatively innocuous procedure. We see no necessity, as has been suggested by Cosgrove [9] and other authors, for a patient to go through labor where there is even a remote possibility of uterine rupture. It is interesting to note that Connell and Gendreau,[10] also from Margaret Hague Maternity Hospital, admit that rupture of the uterus is not infrequent enough to be disregarded. Eastman, in his discussion of this paper, states: "If you happen to decide on vaginal delivery and the uterus ruptures, there is no error in all obstetrics which carries a higher penalty." This entire discussion is well worth reading.

In reviewing the 2,327 cesarean sections performed between 1950 and 1958, we found one case of uterine rupture after a cesarean section. This occurred during the sixth month of pregnancy when the patient was at home asleep. She was not in labor. The primary section was of the classic type and had been performed elsewhere.

It is of the utmost importance that a thorough evaluation of the history and physical findings be made in order that the expected due date be properly estimated. If the due date cannot be accurately ascertained, the patient should be allowed to go into labor prior to the performance of cesarean section. Only threatened rupture of the uterus should countermand this rule. The important thought which we have gleaned from the authors who recommend vaginal delivery after prior cesarean section is that a short period of labor carries very little risk of rupture of the uterus.

Fetopelvic Disproportion.—Next to repeat cesarean section, fetopelvic disproportion has been our most frequent indication for cesarean section. Any patient who exhibits a borderline or small pelvis should be properly evaluated prior to onset of labor. Stubborn determination on the part of the physician to accomplish vaginal delivery in spite of disproportion is too often one of the main causes of trauma, and it is in this group, when a prolonged labor has been terminated by cesarean section after prolonged rupture of the membrane, a period of dehydration, possible infection, exhaustion, and blood loss, that we see a high maternal and fetal mortality and morbidity.

Breech Presentation: There is no reliable clinical or radiologic method of estimating the relationship between the maternal pelvis and the fetal head in breech presentations. If, by clinical or roentgenographic tests, the pelvis appears small and/or the baby large, and a satisfactory progress of labor is not seen, a cesarean section should be done. As has been shown by Goethels [11] at Boston Lying-in Hospital, there is an increasing tendency to perform cesarean sections for breech presentations since a greater number of babies are salvaged by this method. In our hospital, section was performed in 14% of all cases of breech presentations.

Cephalopelvic Disproportion: An adequate trial of labor should indicate to the attending physician the choice of delivery when cephalopelvic disproportion is present. The patient's age, general condition, previous obstetric history, parity, and other factors should be taken into consideration. It is in the handling of this problem that persistence in vaginal delivery has led to so many bad results.

Uterine Bleeding.—Unless delivery is imminent in abruptio placentae, particularly where there is a living baby, procrastination is dangerous. This has been shown repeatedly in large series of cases. The dangers to the mother, irrespective of blood loss, are well known. The relationship of such conditions as afibrinogenemia to abruptio placentae are well established, and uteroplacental apoplexy (Couvelaire uterus), although rare, is still a factor to be considered. Hysterectomy, which is not infrequently an end-result in these cases, prevents future childbearing. The possibility of intrapartum death and neonatal mortality increases unnecessarily as time advances in the course of labor in abruptio placentae. In partial placenta previa, unless blood loss is small and the patient is making satisfactory progress, we see no advantage in relying on blood transfusions or on a period of "watchful expectancy" during the course of labor when many of the end-results have been shown to be so disastrous. All patients with central placenta previa are automatically subjected to section.

Fetal Indications.—As has been widely attested by the extensive literature written on the subject, by Eastman and Nixon,[12] Halsey and Gordon,[13] and others, fetal distress as an indication is becoming much more widely accepted, since cesarean section has been shown to decrease the associated perinatal mortality. Such factors as consistent changes in the fetal heart tones, especially when they are on the low side, and meconium in the amniotic fluid in patients with cephalic presentation have been suggested as indicating interference on behalf of the infant.

It is conceded by all that there are certain "high priority babies." This group includes babies of primiparas 35 years of age or over in whom it has been shown that postmaturity is very dangerous. Anoxia becomes an increasingly important complication in this group. An adequate but not protracted trial of labor with poor or no progress constitutes an indication for cesarean section in these patients. Also included are cases in which babies have been lost during previous traumatic deliveries, cases of habitual abortion, and cases of infertility in which the patient has become pregnant after long periods of treatment. The method of delivery should be one which involves the least risk to the baby.

Diabetes.—Diabetes could well be listed under fetal indications. We feel, however, that it deserves specific discussion. Under the cooperative efforts of the obstetrician, internist, and pediatrician, the maternal mortality is now no different for the diabetic than for other obstetric patients and the fetal mortality has been reduced significantly. Controversy exists as to the time and method of delivery. Most of our diabetic patients were operated on at 36 to 38 weeks, the indication being primarily fetal. We feel that a section before term offers the best chance for the baby for the following reasons: 1. As a rule, the baby of a diabetic mother behaves very much like a premature infant, regardless of its weight. 2. Since this is true, analgesia and inhalation anesthesia is not well tolerated. 3. Dystocia due to disproportion with prolonged labor is not infrequent, many times requiring operative procedures which these babies do not tolerate well. 4. Few cervices are ripe enough at 36 to 38 weeks to permit easy induction of labor. 5. Failed or unsatisfactory inductions are factors which decrease the chances of survival. 6. There is an increasing incidence of fetal death in utero during the last weeks of gestation.

7. The incidence and severity of toxemia in diabetic mothers increases in the last few weeks of pregnancy.

With the exception of a few easily inducible multiparas and primiparas, most of our patients were subjected to section. In our series, 67 patients were operated on with no maternal death. One neonatal death in the repeat section group was due to hyaline membrane disease. Since these results have been so good, we feel that this method of management has a great deal of merit. An excellent presentation of the subject is given in the recent article by Black and Miller,[14] in which they report that three out of four of their patients were subjected to section. In this series of cases, studied for the period 1945 to 1957, they managed to cut their material mortality to zero, although their neonatal mortality still remained as high as 16%. These authors state that statistics from various medical centers throughout the United States still show a fetal morality of 10 to 50%. In a local general hospital, where the policy has been attempted induction of labor with cesarean section reserved only for those patients in whom induction has failed, fetal mortality is about 25%.

Uterine Inertia.—Whenever uterine inertia results in prolonged labor with poor progress, the possibility of maternal infection and exhaustion points to a questionable outcome. We feel, however, that the importance of this indication will decrease with the judicious use of oxytocin (Pitocin) infusion.

Pelvic Pathology.—Preexisting pelvic pathology which would have necessitated eventual hysterectomy has been an occasional indication for cesarean section in this series on the basis that it would obviate the need for a second surgical procedure with its additional attendant risk, cost, and inconvenience to the patient. The chief of a leading obstetric service in the United States recently visited our hospital and, in the discussion of this indication, agreed that it was valid. He would not, however, accept this indication in his hospital because he felt that it added greater danger to the delivery and also that it would increase his cesarean section rate. It is interesting to note the impact which overconcern with incidence has on the thinking and policies of workers in many institutions. Here, again, we must stress the fact that the patient comes to us for proper medical attention and not to create statistics!

Toxemia.—In private practice, toxemia has become a relatively infrequent indication for cesarean section in recent years. Good prenatal care and newer preparations for combating this problem are no doubt responsible for our not having seen a patient with eclampsia in the past eight years. We believe, however, that cesarean section should be performed in any patient with preeclampsia near term who is not inducible and who does not respond to proper and adequate therapy.

Previous Uterine Myomectomy.—Previous surgery on the myometrium with special reference to myomectomy involving deep incision into or through the uterine wall constitutes an indication for elective cesarean section.

Miscellaneous.—Prolonged retention of a dead fetus in the latter weeks of pregnancy where induction has failed is an indication for cesarean section when the possibility of afibrinogenemia is present. Special consideration should be given those patients having certain medical or surgical conditions not related to the pelvis in whom consultants recommend that the process of labor should not be undergone. Malpresentations, such as transverse, shoulder, and other abnormal presentations, represent a small segment in this group. Cesarean section is also done when the patient has had previous vaginal plastic surgery. There are numerous other occasional conditions which call for the use of cesarean section. We do not consider, however, that they occur frequently enough to warrant tabulation.

Comment

We should like to present our views concerning the many criticisms which are still leveled against cesarean section and its rising incidence. In regard to prematurity in the repeat cesarean section group, this seldom occurs if one attempts to ascertain the accurate due date and rigidly adheres to the criteria listed in reference to repeat cesarean section.

Another criticism has been "increased incidence of hyaline membrane disease." In a recent study made at our hospital by Edward Cantor and associates, it was reported that there were 36 cases of proved hyaline membrane disease during the period 1951 to 1957 in 14,423 deliveries. While the incidence of hyaline membrane disease was found to be three times greater in the cesarean section group, a further analysis revealed that in 50% of the cesarean section group the length of gestation was 34 weeks or under and two-thirds of the babies weighed less than 2,500 Gm. (5½ lb.). In this group, four patients were operated on for bleeding due to placenta previa, one for ruptured uterus, one for diabetes, one for severe toxemia, one for cephalopelvic disproportion, and one for a rising Rh titer in a previously sensitized mother. Two cases in the repeat group were uncomplicated. From this we may conclude that the operation per se was not responsible for the increased incidence of the disease but, rather, the ill considered timing and the conditions for which the section was done.

Colvin [15] has stressed that the factors of remuneration and convenience are elements tending to expand the performance of cesarean section. It is apparent that the incidence of cesarean section is invariably higher in private practice than on the clinic service of the same operator. Erhardt and Gold [16] have shown in their recent publication that in New York City this incidence is 56% higher for

private patients than for general service patients. We question whether this be due to mercenary motives or rather, more probably, to the physician's desire to protect his private practice by doubly insuring the welfare of the mother and baby.

We do not subscribe to the old dictum that a patient must limit her family after the second, third, or fourth cesarean section. As McNally and Fitzpatrick [17] showed, "The capabilities of the uterus after multiple sections have been underestimated." In a survey of 130 patients having four or more cesarean sections, these authors demonstrated that the risk of maternal and fetal mortality was not increased. The term "obstetric cripple" as applied to the patient who has had one or more cesarean sections has now become obsolete.

In regard to unnecessary sections, while many of the patients who are subjected to section might have had successful vaginal deliveries, the decision to perform a cesarean section was based on the probability that the outcome for mother and child would be in doubt. Just as there is an occasional normal appendix or gallbladder removed in order that risk of disastrous results to the patient may be minimized, we consider it much more prudent to perform an occasional borderline section than to procrastinate and gamble against unfortunate results in a case where two lives are involved.

It is sometimes claimed that a cesarean section is performed by the obstetrician because of his lack of dexterity in difficult and complicated vaginal procedures. If this were true, then the patient would be more happily delivered by a cesarean section since, as Thompson [18] has so wisely observed, "One tends to solve difficulties according to the method in which one has the greatest proficiency and with the least risk to the patient." We consider that a well-handled cesarean section is far superior to a mishandled forceps delivery.

The decision to do or not to do a cesarean section should be influenced only by the welfare of the mother and baby. We need a new yardstick for measuring the conditions for which cesarean section should be performed. From the statistics presented above it has been shown that cesarean section as an operative procedure per se is relatively devoid of danger. We feel, therefore, that the teaching of the more liberalized concepts of cesarean section will have the effect of bringing more patients to early and proper care through elimination of this procedure as a last-resort measure. We see no danger in allowing the incidence of cesarean section to seek its proper level. The more frequent use of cesarean section in fetal distress, as advocated by Eastman and Nixon [12] and others, in breech presentations, as advocated by Goethels [11] at Boston Lying-in Hospital, in diabetes, as advocated by Black and Miller,[14] and in specific cases of placenta previa and abruptio placentae must of necessity raise the incidence of cesarean section markedly. It will also result in a furtherance rather than a reduction of the safeguards for mother and baby and, thus, in a substantial decrease in the over-all maternal and fetal mortality and morbidity.

Summary

In 40,423 consecutive deliveries, there was a maternal mortality of 0.059% and a perinatal mortality of 2.54% in a study made for the years 1952 to 1955 inclusive. In 1,826 elective repeat cesarean sections, there was no maternal mortality and a perinatal mortality of 1.7%.

Indications for cesarean section include previous section, fetopelvic disproportion, uterine bleeding, fetal distress, diabetes, uterine inertia, pelvic pathology, toxemia, and previous uterine myomectomy.

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RECURRENCE OF ASIAN VARIANT INFLUENZA IN THE FAR EAST

REPORT OF 1958 EPIDEMIC IN MARINE CORPS ON OKINAWA

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An outbreak of influenza occurred in August, 1958, among U. S. Marines stationed on Okinawa. The causative virus was studied by standard methods in throat swab specimens collected from 39 of the patients within 24 hours after onset, and a detailed vaccination history was obtained from each patient. Most of the men were afebrile within 24 hours, none had complications, and all were returned to duty after five days. The epidemic had some unusual features, and its source was not discovered, but clinically the cases closely resembled those observed in 1957, and the virus was clearly shown to be a member of the new Asian variant set of influenza A viruses. Almost all of these men had been vaccinated against the Asian variant strain not more than nine months before the epidemic. This epidemic in the Far East emphasized the possibility of a recurrent world-wide outbreak in the coming year.

The 1957 influenza pandemic arose in the Far East and spread around the world.[1] This pandemic was caused by a new set of influenza A viruses.[2] There has been considerable speculation and justifiable apprehension about the possibility of a second world-wide epidemic due to this new Asian variant strain. This is a report of the recurrence in the Far East of influenza proved to be due to the Asian variant strain. This outbreak occurred in August, 1958, among previously vaccinated U. S. Marines stationed on Okinawa.

Materials and Methods

A throat swab specimen in saline solution was collected from 39 of the ill men within 24 hours of the onset of illness. These specimens were heat-sealed in glass ampuls and air-shipped from Okinawa to Taipei in dry ice. Acute blood specimens were taken at the same time. Convalescent blood specimens were obtained on 29 of the men 21 days later. The serum was separated from the blood specimens and shipped to Taipei without refrigeration.

Standard laboratory methods were used for isolation of influenza virus in embryonated eggs and its identification and for antibody studies by hemagglutination-inhibition (HI) and complement-fixation tests.[3] The technical methods for the Asian variant strain distributed to interested laboratories by the U. S. Public Health Service's Communicable Disease Center (CDC), Montgomery, Ala., were followed.[4]

Viral antigen and chicken antiserum of strains A/Japan/305/57 (Asian variant), A/Denver/1/57, and B/GL/54 were also obtained from the CDC. The A/Japan/305/57 strain in its egg line was employed as antigen in these studies for both HI and complement-fixation tests. In the complement-fixation test the whole virus antigen was used. For the HI test all serum was pretreated with periodate according to the 15-minute method suggested by the CDC.

Results

Epidemiology.—Only one battalion was involved. Three companies of this battalion returned from a training exercise two days prior to the outbreak. Their sea voyage had taken them to the Philippine Islands. On the day they returned, a fourth company of this battalion went aboard ship and the fifth and last company of the battalion again stayed in camp. In a 24-hour period, beginning two days after the return to Okinawa, the three companies that had been to the Philippines and the company that had remained in camp had a total of 52 men with febrile illness admitted to the hospital. The amount of cases in each company varied from 2 to 18%. The company that had remained in camp had an intermediate 8% of its men hospitalized. The company that had boarded ship two days before the outbreak experienced no illness that resembled this outbreak, nor was there any outbreak of similar illness among the ship personnel that had transported the men. Other troops that had been aboard ship with the involved companies did not experience illness. After 24 hours, there were no more cases in the involved battalion and no cases occurred in other battalions of the division. No history of similar illness could be found elsewhere on the island in other military units or dependents or in the natives.

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The battalion involved was housed in a recently constructed Quonset hut camp approximately in the center of all activities. Each company had a separate barracks adjacent to each other. A common outdoor toilet served all the companies. The battalion had a common mess. Staff noncommissioned officers had separate quarters and ate separately, although from the same kitchen. The number of noncommissioned officers and Negroes involved in the epidemic was roughly proportionate to their relative numbers in the battalion. No commissioned officers were involved. Although movies were shown in the mess hall in the evenings, many of the men who had been on the sea voyage went into the nearby towns the evenings after returning. No close association between the men from the various companies who became ill could be found.

TABLE 1.—*Results of Influenza Virus Identification Studies**

Virus Antigen†	Prototype Serums		
	A/Denver/1/57	A/Japan/305/57	B/GL/1739/54
A/Denver/1/57	80	0	0
A/Japan/305/57	0	80	0
B/GL/1739/54	0	0	80
18 E$_5$	0	40	0
24 E$_4$	0	40	0
27 E$_4$	0	80	0

* HI tests done with prototype and newly isolated viruses as antigen against prototype antiserums. Serums were treated with periodate.
† Inferior numbers refer to egg passage.

Clinical Picture.—Similar complaints were presented by all of the patients, with variation in severity. All men reporting with these symptoms, regardless of severity, were hospitalized in order that they might be isolated. The initial symptom was slight coryza, followed by chills or sensations of fever, malaise, headache, and myalgia. Some complained of a cough that aggravated the headache. Physical examination and routine laboratory tests revealed no consistent abnormalities except for fever. The mean admission temperature was 100.4 F (38.5 C) with a range of 99.2 to 104 F (37.2 to 40 C). Treatment consisted of bed rest, forced fluids, aspirin, and cough medication when indicated. Most of the men were afebrile within 24 hours after onset, although a few had recurrent fever during the second evening after admission. The average period of hospitalization was three to four days, with all men being returned to duty after five days. No complications occurred.

Vaccination History.—Detailed vaccination history was available on the 39 patients from whom throat swabs were collected. Thirty-seven of these men had received at least one injection of influenza vaccine containing the Asian variant strain, and 15 had received two injections of such vaccine. Twenty-eight men received 1 ml. of polyvalent vaccine containing 200 CCA units each of Swine, PR-301, FM1, and Japan/305 strains of influenza A and the Great Lakes 1954 strain of influenza B. Twenty-four of these injections were given in November, 1957, with the rest in either October or December. A total of 23 of the men received monovalent Asian variant vaccine containing 400 CCA units. Twenty-one of these injections were given in February and March, 1958, with the others being given later, the last in May, 1958.

Laboratory Studies.—Three viruses were isolated from the 39 throat swab samples. Identification of these strains as Asian variant influenza A related to A/Japan/305/57 by the HI test with standard antiserums is shown in table 1. The isolate 18 was insensitive to nonspecific serum inhibitors and easily identified. The other isolates, 24 and 27, were sensitive to inhibitors, and it was necessary to treat the antiserums with periodate to obtain specific reactions. After this treatment there was lower titer inhibition of the new as well as of the standard strains.

TABLE 2.—*Results of HI and Complement-Fixation Tests in Thirty-eight Marines, with Asian Variant Strain of Influenza A Used with Twenty-nine Paired Serums**

Case	HI		Complement-Fixation	
	Acute	Convalescent	Acute	Convalescent
1	20	80	16	32
2	20	80	16	32
3	0	80	0	128
4	0	20	8	32
5	0	0	0	8
8	0	0	16	16
9	0	0	8	8
11	0	10	32	16
12	0	10	0	0
13	0	20	8	32
14	0	0	16	16
15	0	20	16	64
16	0	0	0	8
18	0	320	64	128
19	0	40	0	32
20	0	0	0	64
21	0	10	32	64
22	0	0	16	32
23	0	20	8	8
26	0	10	8	32
27	0	20	8	32
28	0	10	8	16
29	0	160	32	>256
30	0	0	16	64
31	0	0	32	32
33	0	0	16	32
34	0	0	8	32
37	0	10	8	32
38	0	10	8	16

* A/Japan/305/57 strain used as antigen. In complement-fixation test, whole viral antigen was employed. Results given are reciprocals of original serum dilution: in HI test 0 = <10; in complement-fixation test 0 = <8. All convalescent serums were taken 21 days after acute.

Both HI and complement-fixation antibody studies were performed with each of the 29 paired serums, and the results are shown in table 2. A positive

fourfold rise in titer in one or both tests was found in 16 of the serums. The HI test gave positive results 11 times, and the complement-fixation test showed a diagnostic rise 12 times. In addition, a large number of nondiagnostic twofold rises were found. These included seven HI tests with 1:10 titer in the convalescent serum where no inhibition was found in the acute serum at 1:10, the lowest dilution tested. Only four of the paired serums failed to show at least a twofold rise in one of the serologic tests.

It can also be seen in table 2 that only 2 of 29 acute serums showed HI antibodies. Single serum samples were collected from 13 men in the same battalion who were not ill, and 7 showed HI antibodies.

Eleven paired serums were tested by HI with use of isolate 18 (A/Okinawa/18/58) as antigen. The results were similar to those obtained with A/Japan/305/57 used as antigen.

Comment

That a member of the new Asian variant set of influenza A viruses was the cause of this unusual epidemic seems clear. The source of the epidemic is not clear. The recent return of part of the men involved from the Philippines would suggest the possibility of importation of the virus. The incubation period could not have been more than two days, since the men involved were separated until two days prior to the onset.

Influenza epidemics are commonly propagated with person-to-person spread. This outbreak has the characteristics of a common source, single-exposure epidemic. If a common vehicle was involved, it was not discovered. The failure of influenza to spread to contacts is most unusual. The prompt isolation of the cases, such as practiced here, generally fails to prevent propagation of influenza. The immune status of the troops involved may have been responsible for the lack of spread. However, it is difficult to rely on this optimistic view regarding immunity, since the epidemiology of this influenza outbreak is so unusual. Also, the clinical severity in the cases that did occur was not modified from that observed in 1957.

It would appear that, if epidemic influenza due to the Asian variant strain can occur in a group of healthy young adults who had an unusually high risk of exposure to the same agent within the past year and who represent the group in the population which has had the greatest amount of vaccination, then another world-wide epidemic could occur within a year. Past experience would indicate that the sooner such an outbreak would occur the greater would be the immunizing effect of the 1957 pandemic in limiting the extent and severity of such a recurrence. As this is written in October, 1958, sporadic cases of influenza are occurring in the civilian population in Taiwan. Asian variant influenza A strains have been isolated and identified. This is the first known recurrence of influenza on this island since April-May, 1957.

Summary

In August, 1958, an epidemic of influenza involved 52 U. S. Marines on Okinawa. The three influenza viruses isolated were shown to be closely related to the 1957 strains of Asian variant type A. Serologic evidence of infection with this strain was demonstrated in a significant proportion of the men involved.

Some of the interesting aspects of this epidemic are as follows: Almost all the men involved had received one injection and many had received two injections of influenza vaccine containing the Asian variant strain between six and nine months prior to the epidemic. The clinical illnesses were similar in type and severity to those reported in 1957. Some of the men who became ill had returned by ship from the Philippine Islands two days prior to onset of the outbreak. All the cases occurred within a 24-hour period among the enlisted men of one battalion, with no known spread. This outbreak is significant in regard to the possibility of the Asian variant strain causing a world-wide outbreak during 1958-1959.

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Capt. Julius M. Amberson (MC), U. S. N., formerly division surgeon, Third Marine Division, and Lieut. Milford E. Gates (MSC), U. S. N. R., assisted in this study.

The opinions and assertions contained herein are those of the authors and are not to be construed as official or reflecting the views of the Navy Department or the naval service at large.

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OPHTHALMIC USE OF NOVOBIOCIN

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The sensitivity of 270 strains of bacteria isolated from 264 patients with external eye infections was tested against novobiocin. There were 136 strains of coagulase negative staphylococci, all of which were sensitive to novobiocin; 100% sensitivity was likewise found in 89 strains of coagulase positive staphylococci, 5 strains of diplococcus pneumoniae, and 15 strains of alpha and beta hemolytic streptococci. Varied results were obtained with other organisms, and 13 strains of Pseudomonas aeruginosa were found uniformly resistant. Thirty patients with various clinical types of external ocular infection were treated with an ointment containing 1% novobiocin every three hours during the day. Clinical cure resulted in 28; in the two unsuccessful cases the infection was ascribed to either a fungus or a virus. The effectiveness of novobiocin was demonstrated, but the authors advise limiting its use to the more serious eye infections.

Novobiocin is a new antibiotic drug derived from cultures of Streptomyces niveus or S. spheroides. The majority of gram-positive bacteria are highly susceptible to this antibiotic drug, while gram-negative organisms have a variable susceptibility. Bacterial cross-resistance to novobiocin from use of other antibiotics is not known to exist.[1] Sery and co-workers [2] concluded from their study with experimental animals that "novobiocin is a useful antibiotic for treating ocular infections involving sensitive bacteria." Finland [1] states that, clinically, novobiocin has been used effectively against infections, particularly those caused by susceptible staphylococci. However, he feels it is best used with another antibiotic to which the organism is also susceptible.

The present study was undertaken to determine the susceptibility to novobiocin of various bacteria isolated from external ocular infections and to determine the effectiveness of novobiocin ointment in the treatment of such infections. (The ophthalmic preparation of this antibiotic is not presently available commercially.)

Methods and Materials

In Vitro Studies.—The sensitivity of 270 strains of bacteria isolated from 264 patients with external eye infections was tested against novobiocin in the following manner: With use of strict aseptic techniques, cultures were taken from the lower conjunctival cul-de-sac of patients having such infections as conjunctivitis, blepharitis, dacryocystitis, corneal ulcer, or socket infection. The cotton swabs were placed in thioglycollate broth and incubated at 37 C for 24 hours. When growth occurred, isolations were made on rabbit-blood brain-heart infusion agar. Then the organisms were streaked heavily on other plates containing the same medium. Paper disks impregnated with 100, 30, and 5 mcg. of novobiocin were placed on the medium 2 cm. apart. Readings for zones of inhibition of growth were made at 6 and 24 hours. The presence of a clear zone around the disk was considered as indicating sensitivity of the organism to the antibiotic drug. Identification of the bacteria was made by standard biochemical tests.

In Vivo Studies.—A total of 30 patients demonstrating various clinical types of external ocular infection were treated with an ointment containing a 1% concentration of novobiocin given every three hours during the day. These infections included 23 cases of acute conjunctivitis, 5 of chronic blepharitis, and 2 of marginal keratitis. Eye cultures were obtained prior to treatment. Patients were requested to return in three to five days, and clinical evaluation of the therapy was made.

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Findings

Table 1 shows the novobiocin sensitivity of various bacteria isolated from external infections of the eye. The gram-positive cocci were extremely sensitive to novobiocin. All of the 225 strains of staphylococci were susceptible to this drug. On the other hand, the gram-negative rods showed a variable sensitivity. It is important to note that novobiocin was completely inactive against the 13 strains of Pseudomonas aeruginosa and only three of the five strains of Proteus vulgaris were sensitive to this drug.

Bacterial isolates from the patients with clinical cases of ocular infection consisted of staphylococci (both coagulase-negative and coagulase-positive) and streptococci. All of these strains were sensitive to novobiocin in vitro. Clinical cure resulted in all but two patients after the use of the drug. In one instance the conjunctivitis was due to Candida, and in the other it was probably of viral etiology. Only one patient developed contact dermatitis after the use of novobiocin. This, however, quickly subsided after the discontinuance of the drug therapy.

Comment

The selection of an antibiotic for use in treatment of eye infections should be guided by a number of factors. Most important, the severity of infection should be classified as "major" or "minor." A major eye infection is one which threatens sight (e. g., corneal ulcer), threatens life (e. g., orbital cellulitis), or may disfigure cosmetically (e. g., eyelid cellulitis). Obviously, major infections warrant the most vigorous and prompt therapy and justify the expense of laboratory studies such as Gram's stain, cultures, and sensitivity determinations. In these cases antibiotic therapy is begun immediately, before culture reports; however, Gram's stain should be done promptly for guidance in antibiotic selection. At present, one of the good indications for ocular use of novobiocin is major eye infection caused by a gram-positive organism. Almost certainly, novobiocin will be effective under these circumstances. Topical and systemic routes of administration should be used simultaneously. The importance of Gram's stain is underscored by the

TABLE 1.—*In Vitro Sensitivity of Ocular Strains of Bacteria to Novobiocin*

Organism	Strains Tested, No.	Susceptible Concentration, Mcg. 100	30	5	Not Susceptible, No.	Susceptible, %
Staphylococcus						
Coagulase negative	136	136	136	136	0	100
Coagulase positive	89	89	89	89	0	100
Diplococcus pneumoniae	5	5	5	5	0	100
Hemolytic streptococcus						
Alpha	10	10	10	10	0	100
Beta	5	5	5	5	0	100
Gamma	6	5	2	0	1	83
Proteus vulgaris	5	3	1	0	2	67
Aerobacter aerogenes	6	3	0	0	3	50
Pseudomonas aeruginosa	13	0	0	0	13	0

fact that novobiocin is almost completely ineffective against Ps. aeruginosa, a common and virulent gram-negative organism.

Minor infection includes the common, superficial eye infections, such as blepharitis, conjunctivitis, and sty. Since these minor eye infections are relatively harmless and are ordinarily adequately treated by thoughtfully chosen antibacterial drugs, the expense and bother of culture and sensitivity studies are clearly unwarranted, except in unusually persistent and stubborn infections. We do not believe that novobiocin should be used routinely in therapy of minor eye infections.

The known percentage of resistant bacterial strains and the incidence of different bacteria as the cause of ocular infection must be taken into account in the selection of an antibiotic. Table 2 lists the percentage of staphylococcic strains (isolated from patients with eye diseases) which were susceptible to the specified antibiotic.[3] It is evident that many strains of staphyloccocus were resistant to these antibiotics. Since it has been demonstrated that these organisms will develop resistance to novobiocin, as well as to other antibiotics, we believe the systemically usable drugs, such as novobiocin, chlortetracycline (Aureomycin), and oxytetracycline (Terramycin), should not be used promiscuously for common, insignificant infections. Such use will inevitably hasten development of the resistant strains which even now are ravaging in nurseries. Not only will use of the drugs suitable for topical use only

TABLE 2.—*Antibiotic Sensitivity of Staphylococcic Strains Isolated from 115 Patients with Primary and Secondary Conjunctivitis*

Drug	Dosage	Susceptible, %
Nitrofurazone (Furacin)	10 mg.	100.0
Bacitracin	20 units	86.8
Tetracycline	60 mcg.	78.2
Chlortetracycline (Aureomycin)	60 mcg.	76.4
Choramphenicol	60 mcg.	72.6
Oxytetracycline (Terramycin)	60 mcg.	67.9
Neomycin	60 mcg.	64.8
Dihydrostreptomycin	100 mcg.	63.4
Penicillin	10 units	62.6
Erythromycin	10 mcg.	56.3
Polymyxin B	30 mcg.	7.5

(nitrofurazone [Furacin], sulfacetamide, neomycin, bacitracin, polymyxin B, and others) delay development of bacterial strains resistant to systemic drugs, but these topical drugs actually are more effective against staphylococci. This is because they are less frequently used, and, therefore, the bacterial resistance index is low. Another logical and effective step is the use of combinations of these topical antibiotics, as is often done commercially (e. g., Neosporin, which contains neomycin, bacitracin, and polymyxin B). Table 3 lists the frequency with which the various types of bacteria are found in eye infections.[4]

TABLE 3.—*Organisms Found in Patients with Conjunctivitis*

Organism	Times Found No.	Times Found %*
Staphylococcus pyogenes var. aureus	39	13.0
Staphylococcus pyogenes var. albus	131	43.8
Staphylococcus pyogenes var. albus (hemolytic)	46	15.4
Streptococcus		
Alpha	3	1.0
Beta	18	6.0
Gamma	4	1.3
Gram-negative rods (unidentified)	39	13.0
Diphtheroids	10	3.3
Moraxella lacunata	4	1.3
Escherichia coli	1	0.3
Pseudomonas aeruginosa	3	1.0
Diplococcus pneumoniae	4	1.3
Bacillus subtilis	10	3.3
Hemophilus conjunctivitidis	2	0.7
Proteus vulgaris	1	0.3
Neisseria	4	1.3
Inclusion blennorrhea virus (diagnosed by smear)	6	2.0

* Distribution of organisms in the total number of patients with positive findings.

Novobiocin is well tolerated in amounts of 0.5 Gm. given every six hours. Rashes and other minor reactions are not infrequent, but, otherwise, this antibiotic is relatively nontoxic. Combined therapy of novobiocin with penicillin or tetracycline is reported to have a synergistic effect against bacteria and to delay development of resistant strains.[1]

Topically applied to the conjunctiva, novobiocin is irritating in concentrations of 2.5% or above. More than 1 or 2 mg. is not well tolerated on intra-

ocular injections. Novobiocin penetrates the uninjured eye poorly, but effective intraocular levels can be obtained in the presence of corneal epithelial loss or blood aqueous barrier damage.[2]

The fact that patients with improperly diagnosed and treated cases are occasionally seen clinically prompts us to emphasize the need for accurate differential diagnosis. The red eye in acute glaucoma or acute iritis may be mistaken for an infection—an error which usually has disastrous results. The commonly encountered cases of allergic conjunctivitis will not, of course, respond to antibiotics, much to the patients' annoyance and expense.

Summary

Novobiocin has been demonstrated to be extremely effective against strains of gram-positive organisms isolated from patients with eye disease. Clinical trials substantiate its effectiveness in such infections. Gram-negative organisms respond poorly to novobiocin.

In order to minimize development of resistant organisms, use of novobiocin (and other antibiotics suitable for systemic administration) should be restricted to treatment in the more serious eye infections.

The novobiocin ointment used in this study was supplied as Albamycin ointment by the Upjohn Company, Kalamazoo, Mich.

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PSYCHIATRIC UNIT IN A GENERAL HOSPITAL

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Three years of experience with a newly established psychiatric ward show that there are advantages in having such a facility within a general hospital. This development proceeded without any disturbing influence on the rest of the hospital. The dangers of suicidal or aggressive behavior were met by skillful screening of the patients on admission, by using the therapeutic milieu to control disturbed behavior, and by establishing a day-room where most of the ward activities now occur. Except for Chamberlain screens on the windows, conversion of one bedroom to a security room, and a locked door separating the wing from the rest of the ward, the change was not in architecture but in policy and procedure. Three case histories illustrate the techniques whereby hospital personnel, the patient's family, and the community were woven into a successful therapeutic scheme.

During the past 30 or 40 years a great many changes have occurred in connection with the treatment of the mentally ill. In general, this period marks the development of the dynamic theory and practice in psychiatry, although the Pennsylvania Hospital, which opened in 1752, had a plan of treatment for psychiatric patients in the general hospital, as did New York Hospital, which opened in 1791.[1] Sparked in the beginning by a few individuals, the new ideas and attitudes have gradually been made known to the general public. The force of public opinion, together with continued efforts on the part of individuals interested in the welfare of the mentally ill, has resulted in tangible changes in psychiatric practice.

Among other changes, one having to do with the treatment of hospitalized patients has stimulated increased interest during the past 20 years.[2] For a long time the accepted treatment of the severely mentally ill patient was hospitalization in closely guarded hospitals, often remotely situated. It appears that such practice was in keeping with the general attitude of the public and the medical profession concerning problems of mental illness. This general attitude was in great part motivated by fear and ignorance, so that with the development of a psychosis in an individual, with all of the strange and bizarre behavior, it is understandable that such a patient would be carefully hidden away.

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A greater degree of understanding of mental illness has succeeded in changing the older attitude dominated by fear and ignorance. A great many people have learned that mental illness is a matter of degree, that it is no longer considered incurable, and that in fact the prospects for recovery in many cases are excellent.

Along with this gradual development of knowledge and the lessening of fear concerning mental illness there has been increased evidence of willingness to look at the problem. One result of this has been that the mentally ill patient, instead of being hidden away in a remote hospital, has been studied and treated in more accessible surroundings. Specifically, an increasing number of general hospitals have set up psychiatric facilities. Many reports indicate that under these circumstances, where the mentally ill patient is treated in a more open manner, the chances of success for the treatment are greatly increased. World War II provided a considerable impetus for treating psychiatric patients in a general hospital.[3] As Brill[3c] has said, "In contrast to usual practice in civilian hospitals, the Army made provision for the treatment of psychiatric patients in practically all its hospitals" and "in no instance was its presence a disturbing influence on the rest of the hospital." Other authors have corroborated these reports.[4]

This change in the treatment of mentally ill patients has proceeded to the point where it is gaining general recognition and further changes of even greater magnitude appear likely in the future. The report of the Commission on Hospital Care in 1947[5] recommended, among other things, that "general hospitals should provide facilities and personnel for the diagnosis of mental diseases and for the treatment of those patients who are not in need of long-term institutional care." From 1948 to 1952, the number of general hospitals in the United States with psychiatric facilities rose from 133[1] to over 300.[4a] In Canada, in 1952, 48% of hospitals had some form of service for psychiatric patients.[6] Cameron[7] feels that the establishment of psychiatric units in general hospitals has probably done more to advance psychiatry than any single diagnostic or therapeutic discovery, partly because it has brought psychiatry into intimate contact with the rest of medicine. Juul[8] notes that "the American Medical Association and the American Hospital Association have indicated that resident programs that do not include inpatient care of emotional disorders may soon be denied full credit and approval."

In addition to the advantages of contact with other branches of medicine and the better facilities for treatment of the general hospital than those of the state mental hospital, there are advantages simply in the general hospital's close proximity to the community.[9] Castelnuovo-Tedesco[10] states that care of psychiatric patients on open medical and surgical wards, originally dictated by necessity, offers "many advantages over the more customary methods of segregating psychiatric patients from other types of patients and treating them in a separate setting." In his presidential address at the American Psychiatric Association meeting in May of 1958, Dr. Harry C. Solomon expressed the opinion that mental hospitals as we have known them in the past probably will disappear, at least to a large extent.

Preparation of Psychiatric Unit

This paper is concerned with the experience of developing a psychiatric ward in a University Medical Center setting during the past three years. While there was no provision for an inpatient psychiatric facility originally, it became apparent before the hospital opened that there were advantages in having such a facility. However, since the hospital was already built and extensive reconstruction was not practical, a wing consisting of seven two-bed rooms was placed at our disposal. This set the tone for the ward milieu, since it was impossible to equip the ward for maximum security. This meant that the potentially or actually dangerous psychiatric patients would have to be handled by other techniques than those of architecture. Except for Chamberlain screens on the windows, the conversion of one bedroom to a security room, and a locked door separating the wing from the rest of the ward—a surgical service—no extraordinary precautions were taken. No efforts were made to protect against the possibilities of suicide or aggressive behavior by means of major reconstruction. Mirrors, washstands, bathrooms, glassware, and closets were left the same as throughout the rest of the hospital. Furniture was purchased to make the rooms comfortable. Oxygen outlets counter-sunk in the wall were closed over since they were not necessary, leaving an unbroken wall surface.

We were now ready to open our 10-bed ward. Two beds were lost in converting one bedroom, outside the locked door, to a combined conference-treatment room; two more beds were lost in stripping down one bedroom to bare walls and screened windows (though as fully furnished as necessary) as a security room, to be used only for emergencies with acutely suicidal or homicidal patients.

It was our plan, and we have proceeded thus to the present, to minimize serious accidents in two ways. The first is by choosing patients who, regardless of diagnosis, are not likely to be acutely dangerous, which technique is dependent on the skill of the screening team (first-year resident, social worker, and senior resident). About half our patients are psychotic; the rest suffer from severe neuroses (two-thirds being depressions severe enough to require hospitalization). Of the total admissions less than 10% had to be transferred to another psychiatric facility for longer term treatment (we limit patients' stay to a maximum of 90 days). There has been one genuine suicide attempt on the ward in three years. The patient was discharged over a year ago and has continued in outpatient treatment to the present.

The second method is by controlling whatever disturbed behavior arises by the influence of a therapeutic milieu, created in the main by the residents, nurses, and aides. This despite the fact that our residents were in their first year, our nurses ranged (when we first opened the ward) from almost to wholly inexperienced, and none of our aides had ever worked in a hospital, much less a psychiatric ward, before.

As we prepared to open, we became aware that our program was doomed without one more change. Except for a narrow corridor on which all rooms face, there was no room for patients to stay except in their bedrooms, so two more beds were sacrificed; this room became the day room, where most of the ward activities now occur.

With the ward open we were faced with a considerable problem: how could eight mentally ill patients, living close together for a period of time as a family, with all the stresses and strains that this implies, get the best possible treatment from inexperienced therapists and personnel, on a closed ward with no recreational or therapeutic facilities, in a part of the hospital the remainder of which was given to medical and surgical beds? The solution of this has been gradual, continuing, and progressing, and not only has it served for the treatment of our patients, for the operating of a residency, and for the training of personnel but also it has functioned as a pilot study in preparation for the opening of the Neuropsychiatric Institute, a 186-bed wing of this same general hospital. This latter aspect, the assimilation of a psychiatric unit, originally considered as a foreign body in the healthy tissue of the general hospital, has been successful and has softened the problems to come when the much larger unit is to become an organic part of the hospital. There can also be no question that, in having placed the psychiatric unit within the general hospital, the feeling that psychiatry is part of medicine has been strengthened by the day-to-day experience of the rest of the hospital with our service. The interchange of information and consultations by house staff on ours and on other services created by their working together day and night has made it difficult for the artificial barriers to develop that can so easily occur when the psychiatric service is housed in a separate building.

Therapeutic Milieu

To be a patient in the general hospital then is a major step in ending the painful segregation of the psychiatric patient. The next step is to produce a therapeutic milieu. A beginning to this can be made by having new rooms pleasant and livable; but, without a vigorous activity program in which everyone, personnel and patients alike, participates, the hope of approximating a healthy environment would dissipate.

There has been sufficient interest in a small group of the public to donate money so that it has been possible to get furnishings for the day room, television, radio, phonograph, a small piano, a kiln for ceramic work, and occupational therapy equipment. More important than this has been the contribution of the volunteers, women from the community who have set up a schedule of activities so that patients are busy with enjoyable activities throughout the week. This is not just a matter of filling time, for the patients actively anticipate these activities. One would think, judging from the types of patients on the ward—some of whom are psychotic, some of whom are very withdrawn, some of whom are severely depressed—that such a program would be doomed by the nature of the patients' illnesses. However, starting with the regulation that all patients must participate unless there is a medical contraindication, the patients, on finding that the staff thinks this an important part of their treatment, become intensely involved. In addition, on holidays the volunteers and patients together prepare a party, to which the personnel, the residents, and the faculty of the department of psychiatry are invited.

Beyond this vigorous program on the ward, facilities in the community are used. This is a vital part of the program, for it reinforces the attitude held by all persons working on the ward that the patient should not be given the feeling that he has been isolated because of a dread illness, that he must neither contaminate or be contaminated by the rest of the community. It was this that made us want a ward within the general hospital; it was this that made us fight to maintain psychiatry within the medical center; it was this that provoked us to developing an activities program; it was this that brought the volunteers so much on to the ward; and it is this that makes us use the community as part of the treatment. However, both the patients and the community must be protected. Thus, each patient is carefully screened by a resident and the senior resident to be sure there are no contraindications for his taking part in any particular activity off the ward. Regulations defining degrees of responsibility within the medical center, on the campus, and in the city have been drawn up in great detail, and the physician must write specific orders within these regulations for responsibility. Thus, depending on the specific type of illness, a patient may go accompanied or unaccompanied to art shows, the theater, movies, restaurants, stores, concerts, and selected athletic facilities on the campus and on walks, picnics, trips to the beach, and visits home. Thus the gap between hospital life and community life is lessened and the stigma of mental illness is in large part removed. This extremely careful tailoring of the milieu and the use of community facilities for each

patient produces an essential addition to the armamentarium of psychotherapy, drugs, and other somatic treatment.

For the careful scrutiny of each patient's program, and in addition to the supervision of treatment which each resident gets from the senior staff, there are various conferences in which everyone communicates what he knows of the patient in such a way that a much more complete picture of the patient is obtained by everyone who will be dealing with him. There is a conference of the aides with the senior resident, a conference of the nurses with the chief of the inpatient service and senior resident, and a conference of the volunteers with the senior resident. A milieu conference is attended by everyone on the staff working with the patients in which the over-all manner of dealing with the patients and the milieu in which the patient lives are studied. On this basis changes are made to fit the patient's needs.

Two other techniques are available to us in keeping with our desire to work with the patient in his community. The first, used in all but emergency cases and direct transfers from other wards or hospitals, is the preadmission interview done in the patient's home by the resident and social worker. This permits a much clearer picture of the environment in which the illness arose. The second is that the patient may, at the time of discharge from the ward, continue treatment with the same physician in our out-patient department. This often makes early discharge more feasible. Arrangements for continuing treatment in the outpatient department are made before the patient's discharge. Initial discharge planning actually starts at the time the patient is admitted to the ward. With such a setup, it is also easy for significant members of the family who need treatment to begin work in the outpatient department.

Report of Cases

The following three cases illustrate the successful use of this special environment.

Case 1.–The patient was a 40-year-old man, a member of the faculty at a local college, who was seen for four months in outpatient psychotherapy because of a depression related to feelings of inadequacy regarding his relationships with his colleagues, his ability to teach, and his ability to write. Prior to his depression he had been a highly competent and respected friend, teacher, and writer and had developed a highly successful career. He was under excessive pressure from his ambitious wife, who felt that his depression was simply due to cowardice. Because of his depression he was doing increasingly poor work and endangering his reputation and his career. Despite psychotherapy and the use of drugs, he became psychotically depressed. He was hospitalized because he was felt to be a severe suicidal risk and because it was feared that he would indeed destroy his career if an end could not be put to the process.

After additional study in the hospital, electroshock was prescribed and started. After a few treatments, the depression began to lift but the patient was realistically concerned lest a long hospitalization be detrimental to his career. When it was clear he was no longer a suicidal risk, he was permitted to leave the ward for a few hours a day to work. He traveled to his campus where he prepared and delivered lectures, met with his colleagues, and began to write papers again, while still receiving electroshock. The treatment in the hospital continued until the patient's depression lifted. Throughout this period, although he was hospitalized, he had had a break of only a few days in being away from his office, and his work improved so considerably and so rapidly that his career was saved. Had it not been for the opportunity to allow this patient to return to his own community he would, at the least, have been set back considerably in his life's work. Over two years have passed since the patient was hospitalized. He has needed no further hospitalization nor has he been depressed. His career has proceeded beyond his expectations and his productivity has continued to increase.

Case 2.–The patient was a 36-year-old married composer, who, prior to her admission, had had several episodes during which she wandered aimlessly, apparently out of contact with reality. While in this condition, she was admitted to the psychiatric ward. During the first few days of hospitalization she appeared transiently confused and withdrawn, occasionally overtly anxious, but also at times superficially normal. Psychotic signs–disorientation to time, delusions of electricity coming out of the ceiling, fears she had killed her husband, speech retardation and blocking, distractibility, and poor concentration–were present. Her husband, a composer and teacher as well, dominated the patient both professionally and personally, a relationship analogous to that which she had earlier with her parents.

As intensive psychotherapy brought into focus problems in the patient's relationship with her husband, he was encouraged to visit her and began bringing his lunch on the ward to eat with her. From the start of her treatment, he too began therapy as an outpatient with a member of the staff. In the patient's and her husband's respective therapeutic interviews, not only was the material they brought to the interviews used but also observations which had been made on the ward when they were together were used. The patient's musical abilities were capitalized on by having her start a class in music for the patients. On one occasion when her husband visited, he interfered with her teaching her class; this incident was later used to good advantage in both her and his treatment.

After two weeks of hospitalization, she began visiting at home for increasing periods of time. By the time she was discharged, none of the signs of gross emotional disorder remained. Shortly after discharge, one of the nurses on the ward twice visited with her at home. She continued in treatment as an outpatient with the same physician until sufficiently well to end treatment. The proximity of the hospital to the community in which the patient lived afforded the opportunity early to start visiting at home, without the patient being more than 10 minutes away from the ward or the physician. It also permitted her husband's frequent visits and his easy integration with the treatment program. Information obtained from the nurse's home visits just after discharge helped the therapist obtain a better picture of the home milieu, which information was used in the outpatient treatment to help the patient achieve an understanding of the problems in her home situation.

Case 3.–The patient was a 50-year-old schoolteacher who was admitted to the psychiatric service as a transfer from neurosurgery two months after receiving a severe cerebral contusion by throwing herself in front of a truck. This suicide attempt occurred after a year of great emotional strain after separation from her husband to whom she had been married for many years. When first seen on our service, she was depressed, agitated, and evasive, with no memory of the suicide attempt. After a period of observation, during which it was the staff's primary task to evaluate the degree of depression and suicidal risk, the patient was started on a course of gradually increasing activities and freedom of movement. Because of artistic interests and ability the patient was

started on a program which included painting, ceramics, piano playing, singing, and play reading. In time she was permitted, at first under supervision and later by herself, to attend plays and concerts and to make trips to museums. This was paced to progress at a slightly faster speed than her depression was lifting or her organic brain syndrome remitting so as to "lead" her away from her psychiatric illness.

From the beginning, her husband was asked to visit with her several times a week; his determination to get a divorce became evident. The two were able to talk freely about this, the patient's attempts to deny his desire for a divorce crumbled but did not increase her depression, since she was guided through this trying period by psychotherapy and by the support of all the personnel and other patients. This permitted her to see this problem more clearly and for the first time begin to plan her future more realistically. Her lawyer spent time with her on the ward, helping her work out details in a straightforward manner rather than the confused approach habitual to her in past years. A conference with school authorities permitted planning whereby the patient was, after discharge, to teach half-time and go to school half-time to work for an advanced degree. She has followed through since discharge and has successfully returned to teaching, is going to school, has weathered the divorce, and has rejoined her friends and taken up the interests of her previous life.

Summary

A psychiatric inpatient treatment facility was developed in a general hospital. It proved that with minimal materials and facilities mentally ill patients can be adequately treated in the general hospital. There is evidence to show that in treating psychiatric patients in this accessible setting the course of the illness is shortened considerably. Where in the past such patients ordinarily would have been sent to remote, poorly staffed hospitals where they would tend to remain for long periods of time, in this situation they remain close to the community and to their own homes. This method of dealing with severe mental illness has been shown to be effective for the patient, and it has the additional advantage of helping to dissipate the fear and ignorance so prevalent in the minds of the healthy members of the community.

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THE PATIENT'S HUSBAND.—Every doctor practicing obstetrics should show consideration to the patient's husband at every possible opportunity. Try to make him feel that he counts for something besides paying the bill. If he accompanies his wife on her first visit to your office, take the few extra minutes required to make his acquaintance instead of ignoring his existence. When he brings his wife to the hospital talk to him in person or over the telephone. Reassure him (put yourself in his position). Find out where he is going to be so you can let him know as soon as the baby is born. Invite him to telephone you for a progress report when the labor is long drawn out instead of allowing him to pester the switchboard operator at the hospital. As soon as the mother is safely in her room, give the glad news to the husband in person or over the telephone. Make sure that he gets to see his wife as soon as possible and, above all, make sure that he sees the baby immediately after he has seen his wife. . . . Much will be gained by talking to the husband as the man, the friend, the father, the valued collaborator, which he surely is.—C. D. Bradley, M.D., A Place for the Husband in Modern Obstetrics, *The Virginia Medical Monthly*, November, 1958.

SCIENTIFIC ADVANCEMENT PROGRAM FOR THE COMMUNITY HOSPITAL

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The nucleus of medical scientists existing in every hospital can serve as a valuable source of energy, enthusiasm, and ideas if it is properly organized. The plan here described started with a scientific advancement committee appointed by the medical staff. Its activities have discovered and utilized some neglected resources in the hospital and the community. It has often been in a position to improve existing facilities and services by a constructive approach, so that the negative attitudes engendered by scrutinizing and threatening the physician have been replaced by the positive motivation of scientific activity. This has not only provided an opportunity for clinical experience formerly confined to medical teaching centers but it has also enabled the hospital to offer the definitive care needed by most patients. Many are now reluctant to travel to distant medical centers. Improvement in the scientific climate of the hospital has resulted in improved morale and attitudes, improved patient care, and better community relations.

Progress in patient care may be promoted and sustained in the community hospital through the establishment of a scientific advancement program. Every hospital staff has a nucleus of medical scientists who may serve as a source of energy, enthusiasm, and ideas for this activity. The material that follows includes the background for this idea and some of the methods that have been employed successfully by a community hospital in stimulating scientific activities.

Hospital Case History

No hospital existed when the wounded from George Washington's army were evacuated to a historic eastern city. The sick and wounded were twice succored in hastily improvised quarters. About a hundred years elapsed before a permanent hospital was founded in Bethlehem in 1872. This industrial community was faithfully served by the hospital, which became known for pioneer work in the field of trauma. A succession of expansions has been climaxed by a current program which has increased its patient capacity to more than 500 beds. The population has expanded from a frontier settlement to a city of 80,000 and a metropolitan area of 500,000. Members of the medical staff have been conscientious, conservative, and devoted to their patients and a few physicians have achieved national recognition. An adequate complement of medical and surgical specialists has been available in recent years. Heavy patient loads and demands of family and community life have allowed little time for scientific contributions by members of the medical staff.

Patients have relied on this community hospital to a greater extent each year, and they have been reluctant to travel to distant medical centers. The distribution of special medical talent to this community has enabled the hospital to offer most of the definitive care that was needed. This stay-at-home trend has increased the technical responsibility of this community hospital, and has provided an opportunity for clinical experience that was previously confined to medical teaching centers. Increasing technical demands on the hospital, availability of special medical talent, accumulating clinical experience, and accelerated developments in medical science have created a need for a program to promote local scientific activities.

The Scientific Advancement Committee

A scientific advancement committee was appointed by the medical staff. Some of the most creative and productive physicians were selected for the initial group. The chairman was expected to remain in office at least three years. About one-third of the members were scheduled to be changed annually, providing most members of the staff with the opportunity to serve on the committee.

It has been useful to select individuals from many different medical disciplines. Eleven members have been found to be a practical committee complement for a staff that exceeds 100 members. The president and president-elect of the medical staff have been encouraged to attend committee sessions to provide administrative continuity.

It has been advantageous to stage meetings in the relaxed atmosphere of a home. This environment has provoked more creativity, enthusiasm, and spontaneity than was usually experienced in the hospital. Our practice has been to invite committeemen and their wives to an informal buffet supper. The enthusiasm of the women has ensured perfect attendance. Committeemen have moved to another room for their meeting, which has rarely exceeded one hour. Friday has been a most satisfactory night for these sessions, since the group was more relaxed at the end of a work week.

From the Section on Neurosurgery, St. Luke's Hospital.

The meeting room was prepared for a formal conference. Seating was arranged around a central table, and the agenda was displayed on a lighted easel. The entire proceedings have been recorded by means of a standard conference recording system. The principal task of the chairman has been to guide the discussion in accordance with the prepared agenda and to make certain that the meeting adjourned on schedule.

Minutes were prepared by listening to the recording and summarizing the discussion on a typewriter. It was surprising to discover many important contributions that were preserved on the recording and yet completely forgotten by all persons who attended the session. Copies of minutes have been distributed to the medical staff, nursing supervisors, hospital administrators, interns and residents, members of the board of trustees, and anyone else in the community who was interested in the scientific activities of the hospital.

Each member of the committee has been expected to execute one or more committee projects. Many of the activities have involved cooperation with other committees of the medical staff. Project assignments were made by letter after each committee meeting.

Meetings have been held quarterly prior to the general staff meeting. This committee has never failed to present an interesting report whenever the medical staff has convened.

Scientific Newsletter

One of the first actions of the committee was to create a quarterly scientific newsletter. News items about individual members of the medical staff were accumulated, edited, and published. Copies of the scientific newsletter were distributed to the medical staff, nursing supervisors, hospital administrators, interns and residents, members of the board of trustees, and other interested persons.

Members of the staff were encouraged to report their interesting cases, and record their attendance at regional, state, national, and international meetings. Personal and professional achievements of individuals were recognized. Publications, addresses, and exhibits by staff members were included. It has been possible to inform recipients of the newsletter about special interests, projects, hobbies, improvisations, and techniques of individual physicians. Occasionally, educational information has been included, such as announcements of basic science courses, discussions of semantics as applied to medicine, and encouragement of physicians to learn a language other than English.

The scientific newsletter has been an important factor in improving the morale of the staff. When all of the scientific activities of the physicians were amassed in a publication, increased staff pride was developed. Attendance at regional, state, national, and international meetings appeared to increase after the newsletter served as a reminder of such opportunities and responsibilities.

Commendation Program

The scientific advancement committee has monitored the educational programs of the hospital. Whenever a presentation of unusual quality was witnessed, a letter of commendation was sent to the individual concerned. Letters were sent to interns, residents, permanent staff or visitors, whenever their efforts have deserved such recognition.

An annual award presentation day has been staged to recognize the intern and resident staff. All interns and residents were offered the opportunity to prepare a 10-minute paper for presentation before the assembled staff. The medical education committee planned the program and the scientific advancement committee judged the presentations for scientific excellence. Each person who made a presentation received a token monetary prize, and the persons rendering the best scientific papers were presented a slightly more valuable reward.

The committee has adopted the position that there have been too few honors in medicine. They expect that their recognition of those who have offered special effort in medical activities will encourage physicians to improve the quality and quantity of their scientific contributions.

Regional Resources

Every hospital has certain basic facilities useful in medical research, such as the medical library and medical record, pathological, and radiological departments. These basic services were studied by the scientific advancement committee and suggestions have been made to the administrator, medical staff, and board of trustees for their improvement for clinical research purposes.

Additional resources have been discovered in the community. A neighboring university possessed technical specialists, library services, special equipment, and laboratories that may be used by a medical researcher. It will be possible to arrange for one or more graduate students to be assigned to a medical research project whenever an investigation falls within the general interest of the university graduate program.

Community health groups were discovered in possession of funds available to finance research projects. In most communities, about 60% of funds have been forwarded to the state and national components for use in research projects sponsored by medical schools, and only 40% have been retained for use in the community. It is possible that a larger percentage of funds may be retained for local use when our local research program becomes more advanced. This latter arrangement will be of

mutual benefit to donor and recipient since it will be possible to inform the public regarding the usefulness of their contributions through local publicity and annual exhibits of research activities. It has been our experience, in surveying the community resources for scientific projects, that so much encouragement and enthusiasm was encountered that it was necessary to delay further recruitment of resources until specific projects were ready for execution.

Improving Existing Services

The scientific advancement committee has had an unusual opportunity to encourage the improvement of existing facilities and services. In the past, the approach to progress in hospital services has often been a negative attitude. For example, the medical record, audit, and tissue committees have been actively engaged in scrutinizing and threatening the physician to improve his performance. This has been an approach that has been resisted by the medical scientist. Increased scientific activity may provide a positive motive for improving medical records and refining medical care.

Planning New Services

The increasing complexity of medicine has created a pressing need for new facilities and services. New equipment has often been supplied to a physician or group which applied the most pressure. This has led to the purchase of expensive equipment which was infrequently used, while some silent departments have been neglected. It will be possible for the scientific advancement committee to study the present and future needs of the hospital as a whole and assist in the orderly acquisition of new equipment facilities and services through an equitable priority system.

Medical Vocation Program

The need for replacement of physicians and specialists, and recruitment of technicians, nurses, interns, and residents has been an enduring problem. The scientific advancement committee has elected to engage in the recruitment of persons for medical careers. This activity will include encouraging new physicians to practice in the community, acquainting high school students with the hospital, participating in vocational programs in secondary schools and colleges, and interesting candidates for internship and residency training in the scientific program of the hospital.

Scientific Forecast

The committee soon encountered the need for long-range planning. Each department was asked to forecast their future needs, including equipment, educational program, personnel, research program, and services. Physicians were eager to express their views about the future of their department. These surveys revealed many immediate requirements, such as the replacement of dilapidated instruments and new equipment needed for definitive care of patients. The most important suggestions were thoughtful plans for additional professional personnel, future technical developments, specialized nursing services, and augmented education programs for nurses and physicians. It was suggested that the medical staff study the scope of the professional talent of the hospital and strengthen all departments by recruiting individuals with special scientific interests who would adapt themselves to the community and the hospital program.

The technical services presently available were summarized and recommendations have been made as to projects that would result in better technical care for the patient. It will be possible for the committee to assist the administration in planning an orderly acquisition of new equipment, facilities, and services so that the hospital may keep abreast with advances in medical science.

Our studies have indicated that the modern hospital must consider increased specialization in nursing services. This program will include the operation of a special care unit for the seriously ill, an ambulatory care unit for the patient being studied for diagnostic purposes, and an organized emergency care and postoperative recovery unit. General nursing education will be necessary at the graduate level, and nurse specialists should be trained for service in the medical and surgical specialties.

The community hospital may play an increasingly important role in the training of interns and residents. The distribution of special medical talent has resulted in a dispersal of clinical and pathological material, so that in many instances the trainee has an unusual opportunity for medical study and training in a community hospital. It will be necessary for the community hospital to meet the challenge of increased educational responsibility by developing sound educational and research programs. A scientific advancement committee will be useful in strengthening this effort.

Future Projects

Every member of the committee has made one or more suggestions for scientific activities. The ideas that follow have been seriously considered as committee projects for the future.

It was suggested that a health museum be sponsored as a contribution to the health education of the community. No other public place seemed more appropriate than the hospital for this facility. The general plan was to display both permanent and temporary exhibits on preventive medicine and on anatomic, physiological, pathological, and surgical

subjects. Planned lectures and demonstrations for organized groups may be added at a later date. A private section of the museum may house selected pathological specimens for use in teaching nurses and physicians.

The medical library will require expansion. A full-time librarian should be enlisted to assist physicians in gathering background material for scientific papers. It is possible that this augmented service may be the beginning of a medical editorial department.

A medical photographic department awaits the selection of a suitable site by the administrator. Clinical and pathological material will soon be permanently recorded for use in medical education and clinical research. After the photographic service has been established, it may be possible to consider the addition of a medical artist.

The ultimate goal of the scientific advancement committee will be to establish a department of medical research. The committee has envisaged a modest building, easily accessible to the clinical departments, and managed by a research director. Many special technical facilities, such as cardiac catheterization, electroencephalography, electromyography, medical library, and medical photography may be housed in this building. Ample equipment, opportunity, and space will be provided for research projects by members of the medical staff.

The work of the scientific advancement committee will not cease with the establishment of this research department. It will be necessary for the committee to sustain scientific interest and activity to ensure maximum use of research facilities and make certain that the quality of patient care keeps pace with the advances in medical science.

Results

It has been difficult to measure the results of this scientific advancement program. Improvement in the scientific climate of the hospital has been experienced in the form of improved morale and attitudes. After publication of the scientific newsletter, it was noted that more persons attended scientific meetings and there was less criticism about absences from the community for such activities. Some estimate of the value of the program may be possible in the future by keeping records of the number of research projects completed, papers published, and improvements obtained in hospital facilities and services.

Some aspects of this program have already spread to other community hospitals in neighboring cities. Even if achievement remains in the realm of enhanced morale, improved patient care and better community relations, the scientific advancement committee considers that these results are well worth their effort.

316 W. Broad St.

HEART SURGERY.—The progress of heart surgery was long held back by fear of the heart's intolerance of interference. Billroth's unwise remark in 1883 has often been quoted, that "the surgeon who should attempt to suture a wound of the heart would lose the respect of his colleagues." Only thirteen years later, in 1896, Rehn reported the first successful suture of a heart wound. Since then many hundreds have been thus treated. . . . The superstition which held up progress for so long is well shown by the observations of the great Ambrose Paré who wrote in 1691, "The heart is the chief mansion of the soul, the organ of the vital faculty, the beginning of Life, the fountain of the vital spirits and so consequently the continual nourisher of the vital Heat, the first to live and the last to die." In spite of this almost lyrical description by Paré it is perhaps sad to think that the heart is really none of these things. It is just a pump, and as a pump we must consider it when we plan to operate it. After the superstition of the untouchability of the heart had been shown to be false, progress in cardiac surgery, after a brilliant start, slowed and virtually came to a full stop except for some slight advance during each of the two world wars. The reason for this was that the time was not yet ripe. The thorax was still a difficult field for the surgeon. Between the two great wars intrathoracic techniques expanded quickly, aided by advances in anaesthesia. By the end of the Second World War the stage was set, the actors were ready and the great drama of the rapid unfolding of successful intracardiac surgery began. Within a few years it had become established as a great addition to surgical treatment and is being used more and more. The drama of this somewhat spectacular field of surgery tends to persist even to-day, but it would be a great mistake to allow this and its rapid development to blind us to its essential practical value. Its rapid success rests on its achievements.—Sir R. C. Brock, M.S., F.R.C.S., The Present Position of Cardiac Surgery, *Annals of the Royal College of Surgeons of England*, October, 1958.

CLINICAL NOTES

IPRONIAZID THERAPY OF PSORIASIS

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This short report summarizes our experience with iproniazid (Marsilid) in the treatment of psoriasis vulgaris. The stimulus to this study came from the publications of Morin and Pult,[1] who reported the beneficial effect of iproniazid therapy in 4 patients with psoriasis, and of Sapuppo,[2] who confirmed this effect in 10 additional patients.

Our interest in this form of therapy was somewhat reinforced by the fact that some physicians and patients connect exacerbations of psoriasis with psychic and emotional changes and that iproniazid has been reputed to be a psychic energizer or stimulant (antidepressive),[3] which would elevate mood, as well as a tranquilizer or psychotomimetic drug in certain patients.[3b] Because some of our patients with psoriasis also suffered from mood swings and periods of depression, whenever we prescribed iproniazid we made it our objective to observe its effects on the psyche as well as on the skin.

Sixteen patients with psoriasis are included in the present study. Eleven were ambulatory patients from the private practice of two of us (M. B. S. and V. H. W.) and five were patients of the Veteran's Administration Hospital in Manhattan. These patients constituted a selected group in that they presented typical and chronic psoriatic skin lesions which had failed to respond satisfactorily to many of the conventional forms of antipsoriatic therapy. All of the patients had extensive involvement of the skin.

Of the 11 patients treated on an ambulatory basis, 5 were women and 6 were men; they ranged in age from 9 to 61 years. The five patients treated at the Veteran's Administration Hospital were all men, 31 to 69 years of age. The duration of the disease prior to therapy with iproniazid varied from 1½ to

Data on Patients with Psoriasis on Therapy with Orally Given Iproniazid

Case No.*	Age	Sex	Duration of Psoriasis, Yr.	Dosage Range (Mg./Day)	Period of Maximum Dosage, Days	Total Period of Therapy, Days	Effect on Psoriasis	Side-effects
1	9	F	2½	100-150	7	48	No appreciable effect	None
2	32	F	1½	150	7	7	No improvement	Drowsiness, dizziness
3	61	M	20	150-200	7	14	Questionable slight improvement	Dry mouth, constipation, dizziness
4†	38	M	14	300-400	32	300	Excellent clearing in 2 weeks, maintained on 350 mg., occasional flare-up	None at effective dose of 350 mg.; dry mouth at 400 mg.
5	57	M	43	150-300	14	42	Questionable improvement; improved mental outlook	Tiredness, lethargy
6	56	M	10	150-250	2	16	No response	Nausea, numbness, constipation
7	15	F	4	50-150	35	60	Good clearing, probably due to concomittant local therapy; improvement continued after stopping iproniazid therapy	Dryness of mouth
8	53	M	25	150-250	2	16	No response	Tired, weak, "never felt worse"
9	41	M	17	100-150	42	56	No response	Anorexia, weight loss
10	44	F	15	50-300	62	96	Additional clearing beyond that obtained with hydrocortisone alone; hydrocortisone therapy continued concurrently with iproniazid; relapse 4 weeks after stopping iproniazid therapy	Dizziness; blurred vision; weakness at 300 mg.
11	52	F	6	150-300	3	17	No response	None
12	31	M	12	175-275	14	54	Partial clearing in some lesions at 250 mg. after one week	Vertigo, fainting, nervousness, insomnia, constipation, strangury, impotence
13	56	M	10	125-300	11	63	Partial clearing in some lesions after 15 days at 225 mg.	Nervousness, tremors, vertigo, constipation at 275 mg.
14	69	M	17	150-250	4	26	None	Vertigo, constipation
15	38	M	14	175-250	9	39	None	Vertigo, nervousness
16‡	34	M	12	100-500	7	150	Definite improvement with doses above 250 mg.; the higher the dose, the greater the improvement	Increased appetite, marked gain of weight, strangury, insomnia, nightmares, impotence at higher doses; mental stimulation

* Patients in cases 1 through 11 were private patients and those in cases 12 through 16 were hospital patients.
† Patient in case 4 weighed 320 lb. (145 kg.).
‡ Patient in case 16 weighed 210 lb. (95 kg.).

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43 years. The table summarizes the results of therapy with iproniazid and includes the side-effects which were encountered.

The initial dosage of iproniazid given to our patients was based on the report of Morin and Pult,[1] who administered 200 to 300 mg. daily. Sapuppo[2] calculated the daily dose on the basis of 3 to 5 mg. per kilogram of body weight. These authors administered the drug for 4 to 16 weeks without incurring serious or nonreversible side-effects. Our initial dose, therefore, was usually 150 mg. daily, in divided doses, given orally. If no response was evident after one or two weeks at this dosage, and if the drug was tolerated, the dose was increased by 50 mg. every few days until either a satisfactory therapeutic result was achieved or the undesirable effects were such that the drug therapy had to be discontinued. All the undesirable effects, no matter how troublesome or disagreeable to the patients, disappeared with cessation of therapy. When patients had been on therapy with large doses for prolonged periods, the dose was reduced gradually in order to avoid withdrawal symptoms wherever possible.

While patients were receiving iproniazid, they were observed regularly in order to evaluate their response to the drug and to investigate for possible undesirable effects.

Results

Of the 11 ambulatory patients, in one (case 4) the psoriasis cleared completely and remained clear for eight months, when it began to reappear despite continued use of the drug. At 10 months the iproniazid therapy was slowly discontinued while other therapy was instituted. Two other patients improved moderately, although one of them (case 10) had to discontinue therapy because of ill-effects; the other one (case 7) continued to improve even after the iproniazid therapy was discontinued.

Among the five patients of the Veteran's Administration Hospital, one (case 16) showed little improvement when given the smaller doses, but he showed satisfactory improvement of all lesions on therapy with larger doses. Two patients (cases 12 and 13) responded with partial clearing while being given large doses. In all three of these patients the ill-effects were severe enough at the therapeutically effective dosage level to eventually necessitate discontinuation of therapy.

In all patients in whom improvement occurred during iproniazid therapy, it began only when the dose was well above 200 mg., except in one young girl (case 7), aged 15, who responded to therapy with 150 mg. Only one of the patients (case 4), who was extremely obese (320 lb., or 125 kg.) was able to tolerate up to 350 mg. daily without ill-effects; at 400 mg. a day he noted dryness of the mouth. In no patient was the improvement maintained when the drug therapy was discontinued.

It is noteworthy that, although there were many different ill-effects (see table), only one patient (case 16) experienced stimulation, reporting that he felt as if he were "on a jag"; when the iproniazid dosage was reduced to below 250 mg. daily this patient "came back to what he was before."

Comment

The results obtained from the administration of iproniazid in our small series of 16 patients with widespread chronic psoriasis is discouraging and differs from the findings of Morin and Pult[1] and of Sapuppo,[2] despite the fact that we administered the drug in dosage both identical to and higher than that of the previous investigators. If iproniazid had none, or even mild, systemic side-effects, it would be worth giving a trial in the attempted management of chronic widespread psoriasis in spite of the fact that in this study only a few patients benefited. However, when this low incidence of favorable responses is considered together with the numerous ill-effects which occurred with the therapeutically effective doses, one is hardly justified in administering iproniazid as a routine form of treatment for psoriasis.

Moreover, since the termination of the present study, reports have appeared concerning serious illness occurring in patients receiving iproniazid therapy for psychiatric disorders. One such article, by Zetzel and Kaplan,[4] reports the occurrence of liver damage concurrent with iproniazid administration in several patients. These findings are discussed in an editorial in the same issue of the *New England Journal of Medicine*.[5] Another article, by Frantz,[6] reports one case of fatal jaundice associated with iproniazid therapy.

The fact that a few patients with psoriasis responded favorably to high doses of iproniazid suggests that further clinical trials may perhaps be warranted with other derivatives of the isonicotinic hydrazide series, with the hope of finding an agent with a better therapeutic index, i. e., one which will yield a greater percentage of patients benefited, with fewer and less troublesome side-effects.

Summary and Conclusions

Iproniazid in relatively large dosage (100 to 500 mg. per day) was administered systemically in the attempted management of 16 patients with generalized psoriasis. The results were disappointing; in only one patient did the psoriasis clear completely, and in four others it cleared but partially during the time they were able to tolerate the drug. The incidence of disagreeable ill-effects was extremely high at the dosage level used in our series. At our dosage level and in our patients with psoriasis we could not observe the reported beneficial effects of

iproniazid as a psychic energizer or mental stimulant or tranquilizer. In only one case was there mental stimulation (at dosage level of over 250 mg. daily); in all other cases any psychic changes noted were in the form of increased fatigue and depression. Perhaps this indicates some fundamental differences between psychiatric patients and those with psoriasis. Fortunately, we encountered no instance of the recently reported hepatic damage from iproniazid. None of the ill-effects in our patients were of serious consequence, and all subsided promptly after discontinuation of therapy. We do not recommend the use of iproniazid for the management of psoriasis but believe that other members of this drug series may be worthy of trial studies.

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ANAPHYLACTIC SHOCK AFTER THERAPY WITH PENICILLINASE

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Penicillinase was first reported by Abraham and Chain in 1940.[1] It was used principally for inhibiting the action of penicillin in culture mediums. In 1956, Becker [2] reported the use of this substance in destroying penicillin in both guinea pigs and human subjects. Since this report, an increasing number of papers have been published describing the beneficial effects of penicillinase in the treatment of penicillin reactions.[3] Toxicity studies have, until the present, failed to reveal any evidence of tissue changes or manifestations of allergic phenomenon from the use of this drug in humans. Untoward reactions after the use of penicillinase have been remarkably mild and infrequent. Zimmerman [3a] found the drug, when given deep intragluteally, to be nontoxic in 52 patients. He did notice fever in two patients, a morbilliform rash in one, and generalized weakness and malaise of a few minutes duration in another. The intravenous use of penicillinase has been reported to give a slightly higher incidence of this type of reaction.

This case is of interest because it represents an anaphylactic reaction which developed within two minutes after the deep intragluteal administration of 800,000 units of penicillinase (Neutrapen).

Report of a Case

This 50-year-old woman was apparently well until June, 1958, when she developed dyspnea and a pleuritic type pain in the right side of her chest. This pain persisted for several days, and the dyspnea became more noticeable. The patient was hospitalized in another city, where extensive examination failed to reveal any cause for these complaints.

The patient was seen by me in August, 1958, and she had the same complaints. In addition, she complained of sore throat and a cough productive of a thin yellow sputum. On physical examination, the blood pressure was 140/90 mm. Hg and temperature was 99 F (37.22 C). The posterior pharyngeal wall was inflamed. On auscultation of the chest there were a few sibilant rales in the base of the right lung posteriorly. The remainder of the examination was not contributory. The hemoglobin level was 15 Gm. %, and the white blood cell count was 12,500 per cubic millimeter, with a normal differential. The urinalysis was normal. An electrocardiogram and chest fluoroscopy revealed no abnormalities. The patient was given 600,000 units of procaine penicillin intramuscularly and advised to remain in bed. Six hours later the patient experienced itching between the toes, in the groin, and on the scalp. On examination one hour later, there were large areas of urticaria on the abdomen and thighs. The blood pressure was 140/90 mm. Hg and the pulse rate was 95 beats per minute. Examination of the lungs revealed a few sibilant rales in the base of the right lung. The patient stated that she had obtained some relief from baking powder, and then recalled having had a similar reaction from penicillin several months previous to this reaction.

The patient was given 800,000 units of penicillinase dissolved in 2 cc. of sterile water, intragluteally, care being taken to be certain that the injection was given intramuscularly, and not intravenously. Within two minutes the patient complained of weakness, dizziness, and dimness of vision. Orthopnea, wheezing respiration, and cyanosis was observed to follow. The blood pressure and pulse were not obtainable, and heart sounds were irregular and about 30 to 40 beats per minute.

Then 0.5 cc. of a 1:1,000 aqueous solution of epinephrine (Adrenalin) was given slowly intravenously until the pulse was again obtainable at a rate of 90 beats per minute, and

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the blood pressure was 70/40 mm. Hg. Another 0.5 cc. was given intravenously, slowly, over the next 15 minutes in order to maintain a palpable pulse and obtainable blood pressure. The patient was admitted to hospital 30 minutes later. An electrocardiogram at that time revealed T-wave inversion of leads V_5, V_4, V_5 with a rate of 106 per minute. An intravenous drip of 1 cc. of 1:1,000 solution of epinephrine in 1,000 cc. of 5% dextrose and water was started, and 50 mg. of prednisone (Meticorten) was added to therapy. Oxygen and meperidine (Demerol) hydrochloride, 75 mg., were administered. The blood pressure rose to 120/80 mm. Hg, and the patient appeared to have recovered. The rash and pruritus had disappeared. The urinalysis and blood cell count were not abnormal. An electrocardiogram taken the following morning showed a return of the T waves to normal.

Comment

Penicillinase is a protein enzyme secreted by Bacillus cereus, Escherichia coli, and many strains of staphylococci. It is thermolabile, with a molecular weight of approximately 50,000. This enzyme functions by hydrolyzing penicillin to the biologically and antigenically inert penicilloic acid. Penicillinase itself is not destroyed or altered by the enzymatic action. It is a foreign protein, and as such, may be responsible for allergic phenomenon. This is particularly true after repeated exposure to penicillinase. No such history could be obtained from this patient. Although no antigen-antibody response has been reported in humans, Fisher and co-workers,[4] as well as Perlstein and Leibmann [5] and Housewright and Henry [6] have reported formation of antibodies after injections of penicillinase in experimental animals.

Summary

A severe anaphylactic reaction in a patient followed the injection of penicillinase for penicillin reaction. Although the drug has a definite ability to arrest the antibiotic and antigenic properties of penicillin, it also has its own allergic properties.

1430 Tulane Ave. (12).

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PENICILLINASE THERAPY—CLINICAL REPORT OF SEVERE REACTIONS

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Penicillinase, an enzyme that destroys penicillin in vivo as well as in vitro, was discovered in 1940. It is produced by bacterial cultures of various strains of staphylococci, Escherichia coli, and Bacillus cereus and is thought to hydrolyze penicillin to penicilloic acid, which is not antigenic. Becker,[1] Minno and Davis,[2] and Zimmerman [3] have reported it as an effective treatment for patients who react unfavorably to penicillin, but local and febrile reactions to it have occurred.

Minno and Davis [2] reported that most patients complained of local pain and tenderness at the site of injection; the area frequently remaining painful for 24 hours. Zimmerman [3] observed transient soreness at the site of injection in one-third of the patients treated; about one-fifth had severe soreness. He therefore recommended that the injection be given intragluteally and deeply. In 5% there was an occasional, mild, febrile reaction which lasted a few hours and cleared spontaneously.

Fisher and co-workers [4] induced the production of antibodies to penicillinase in experimental animals by repeated injections of the enzyme. No allergic reaction to penicillinase has yet been reported in humans, but since it is a protein, frequent repeated exposure might result in the formation of clinically significant quantities of antibodies in a susceptible patient. A nonspecific reaction to protein given parenterally as seen with bacterial vaccine therapy may also occur with penicillinase.

Report of Cases

Case 1.—A 35-year-old man had an upper respiratory infection for which he received penicillin intramuscularly daily for three days. Eight days later he developed generalized

hives, itching, and arthralgia of the hands, ankles, and knee joints. He was afebrile. He was given 800,000 units of penicillinase in sterile water intravenously, and the same dosage intramuscularly. One hour later he had a severe shaking chill with slight respiratory difficulty and cyanosis. His temperature then rose to 103 F (39.4 C). There was soreness at the site of injection and the urticarial lesions were more numerous.

Adrenocorticotropin, 80 units, was administered intramuscularly and prednisone orally, 30 mg. daily. Within 24 hours the lesions and discomfort began to subside. By the fourth day the patient was free of arthralgia. However he continued to get a few urticarial wheals. Penicillinase, 800,000 units, was again injected intramuscularly without an ensuing febrile reaction. There was considerable swelling of the buttock associated with local pain, persisting for 24 hours. By the 10th day the patient was free of lesions.

Case 2.—A man, aged 47, was injured June 19, 1957, in a motorcycle accident, sustaining abrasions on the right ankle. He received penicillin intramuscularly. Ten to 12 days later hives developed, for which he was given antihistaminics with little success. The hives became so severe hospitalization was necessary. Under treatment with adrenocorticotropin and prednisone the hives were controlled but when the prednisone was discontinued the hives recurred.

Steroid therapy was continued intermittently until January, 1958, when, penicillinase, 800,000 units, was given intramuscularly in the right deltoid area. There was intense local swelling, erythema, and pain extending from shoulder to elbow. The patient felt lethargic, nauseated, chilly, and his temperature rose to 101 F (38.3 C). For 12 hours he was semicomatose. The urticaria became generalized, more prominent over the area of injection, and was associated with arthralgia for several days.

Ten days later another 800,000 units of penicillinase was injected intragluteally and he again experienced nausea, chills, fever, and lethargy. On this occasion he slept for 30 hours. When last seen in February, 1958, he still had angioneurotic edema of the face.

Comment

Penicillinase inactivates penicillin and thus may reduce reactions to it. However, in view of the severe reactions noted, certain precautions should be observed. In extremely young individuals, debilitated patients, and in the aged who may not tolerate respiratory or cardiac embarrassment, it is advisable that administration of penicillinase be held in abeyance.

104 E. 40th St. (16).

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CANCER OF THE RECTUM IN POOR-RISK PATIENTS.—[One hundred twenty-eight] patients were managed by what are usually considered to be conservative or palliative methods, consisting of fulguration, irradiation (either by radium or by roentgen rays), or local excision, or combinations thereof. Eighty-one of the patients were men and 47 were women. The youngest patient was 32 years old and the oldest was 84 at the time of treatment. When this study was made, 53 of the patients were living and 75 were dead. . . . After exclusion of the 12 patients who were still living but had not reached the end of the statistical 5 year follow-up period, 54 (46 per cent) of the 116 remaining had lived 5 years or more after conservative treatment and 6 had lived 10 years or more. The principal reason for conservative treatment in each case was as follows: senility and general disability in 39 cases, patient's refusal 30, cardiovascular disease 28, metastatic lesions 19, diabetes 3, arthritis 2, cirrhosis of liver 2, alcoholism 1, carcinoma of bladder 1, carcinoma of breast 1, Hodgkin's disease 1, and mediastinal tumor 1. . . . Out of a total of 7 patients who had adenocarcinomas of the rectum graded 3 and were treated conservatively, 3 were living and well at the end of 5 years and 4 were dead. . . . When one considers the morbidity and mortality associated with the radical surgical treatment in certain poor risk patients with carcinoma of the rectum, it seems good clinical judgment to offer them the benefit of conservative treatment. Although this is sometimes spoken of as "palliative treatment," in our opinion, it is curative in more instances than is generally appreciated. That 54 of a series of 116 patients were living more than 5 years after the initial conservative treatment, that 6 were living more than 10 years later, and that 24 of the 75 deaths were unrelated to the rectal carcinoma has led us to believe that many of these poor risk or refusal patients can be salvaged by conservative methods.—J. H. Wittoesch and R. J. Jackman, Results of Conservative Management of Cancer of the Rectum in Poor Risk Patients, *Surgery*, November, 1958.

INVALIDISM ABOLISHED BY TRANSFORMING PAROXYSMAL TO PERMANENT ATRIAL FIBRILLATION

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and
George C. Griffith, M.D., Los Angeles

A physician, aged 63 in 1958, consulted one of us (P. D. W.) in November, 1933, because of symptoms of fatigue and a daily precordial ache dating back six months. There was no angina pectoris on effort. Nitroglycerin had no effect on this ache. He had always been well and active and had suffered only mild diphtheria as a child, tonsillitis with tonsillectomy in 1918, mild influenza in 1922, and appendicitis with operation in 1925. He had noted extrasystoles for a few weeks in 1929. His habits included moderate use of tobacco (20 cigarettes a day) and of alcohol and coffee, and overwork with few holidays.

The family history at that time revealed that his mother and one brother were living and well; one brother had died of rheumatic heart disease at 10 years of age and a sister of heart disease at the age of 4. The father died of malignant disease at 65

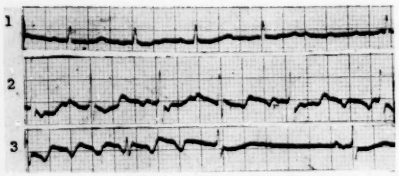

Fig. 1.—Electrocardiogram showing atrial flutter, taken Dec. 12, 1949.

years of age, having had constant atrial fibrillation for eight years before his death. Marital history was normal, with two children living and well.

Physical examination showed no abnormalities whatsoever. The heart was normal in size, sounds, rate (72 per minute), and rhythm. There were no murmurs. There was no evidence of congestive failure. The blood pressure was 120 mm. Hg systolic and 75 diastolic. Fluoroscopic examination showed normal heart size with apparently normal aorta and clear lung fields. By orthodiagram the transverse diameter of the heart measured 10.7 cm. and the internal diameter of the thorax 24.8 cm. The electrocardiogram showed normal rhythm at a rate of 65. The diagnosis was made of "normal heart with a history of former irritability (premature beats) and fatigue."

In February, 1937, after much overwork, paroxysms of tachycardia (at times with absolute arrhythmia) began, lasting one-half hour or so at a rate of about 130. These attacks would occur day or night and would wake him up. They recurred about 15 times during the next eight months. His general health was otherwise good. He was taking quinidine sulfate, 3 grains (0.2 Gm.) at bedtime, which he thought was helpful, and thyroid, ½ to 1 grain (30 to 60 mg.) daily. His blood pressure was found to be low on occasion but at the time of the examination in November, 1937, the pressure measured 115/80 mm. Hg. The heartbeat was regular at a rate of 72 per minute.

From that time in 1937 until 1953, an interval of 16 years, the patient was increasingly beset by frequent paroxysms of atrial flutter or fibrillation requiring much rest and medication until finally attacks recurred five or six times a day lasting from minutes to five or six hours. He became a semi-invalid, feeling very faint during many of the attacks, with very low blood pressure on occasion, dropping to 74/50 mm. Hg in the standing position. Otherwise physical examination was always normal. X-ray films always showed the heart to be normal in size, shape, and position, with clear lung fields. The electrocardiogram was normal between attacks but during the atrial fibrillation, which on occasion changed to flutter, the electrocardiogram showed characteristic atrial and ventricular arrhythmia with essentially normal T waves. When digitalis was administered there was a characteristic depression of the S-T segments. The P-R interval during normal rhythm was within the normal range and the complexes were normal in shape except for the depression of the S-T segments and T waves due to digitalis. The electrocardiogram showing atrial flutter, taken Dec. 12, 1949, is illustrated in fig. 1.

During the few years prior to 1953, much time was spent in the treatment of the frequent paroxysms of the fibrillation and flutter. Digitalis was given in fairly large doses, as was quinidine, for example, 6 grains (0.4 Gm.) every four hours, without benefit. The attacks themselves were terminated by the injection of 500 to 1,000 mg. of procainamide (Pronestyl) and 20 mg. of methoxamine (Vasoxyl) given simultaneously intravenously at a very slow rate. After the abrupt return to normal rhythm, a murmur of aortic insufficiency would occasionally appear and persist for several hours. The blood pressure would rise from a low level of 70/50 mm. Hg to 130/80 on the change from arrhythmia to normal rhythm. Dimenhydrinate (Dramamine), quinacrine (Atabrine), and diphenylhydantoin (Dilantin) were used in successive trials

without benefit. It was necessary for him to remain recumbent on the bed with the head down and the feet elevated on a chair in order to maintain the cerebral circulation during the attacks.

It was finally decided that this distressing situation must be relieved by some more radical measure of therapy and, therefore, in the fall of 1953 the dose of digitalis was increased slowly to 0.6 Gm. of the leaf daily until, by Dec. 28, constant atrial fibrillation began and has continued to date. Figure 2

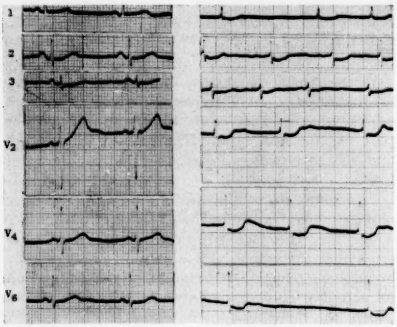

Fig. 2.—Electrocardiograms showing normal rhythm on June 9, 1953 (*left*), and permanent atrial fibrillation on Oct. 28, 1954 (*right*).

shows electrocardiograms of normal rhythm taken on June 9, 1953, between attacks (*left*), and permanent atrial fibrillation taken on Oct. 28, 1954 (*right*).

There has resulted, from this control of the paroxysms of fibrillation through the establishment of permanent fibrillation, an astonishing and tremendous improvement in every way—physical, mental, and spiritual. The heart rate has been well controlled ever since in the 60's and 70's by large doses of digitalis. In January, 1957, 7½ grains (0.5 Gm.) of the powdered leaf was being taken daily, more than five times the average dose, without any gastrointestinal or eye manifestations of toxicity and with a sense of perfect well being. The blood pressure was normal, the heart was not enlarged, and the vital capacity was normal.

Comment

This patient is a most important example of (1) the serious disability which may result from uncontrolled or uncontrollable frequent and exhausting paroxysms of atrial fibrillation or flutter continuing for years, and (2) the remarkable improvement that may come from the establishment of permanent atrial fibrillation with adequate control of the heart rate when enough digitalis is given; in this case it proved to be at least five times the average dose of the medicine taken by individuals who require digitalis constantly. Thus William Withering's original directions published in 1785 that digitalis should be given until it produces an adequate therapeutic effect or toxic symptoms is borne out. Another important feature of this case is that there has been no evidence of structural heart disease at any time nor has the heart muscle been exhausted by the frequent bouts of tachycardia over many years. However, the detriment to the cerebral circulation and to the health, happiness, and usefulness of this man was very evident. We have had experience with a good many other patients of this sort but not with the same degree of disability.

Summary

A case of crippling paroxysms of atrial fibrillation and flutter without structural heart disease occurred in a physician of middle age with dramatic recovery after the establishment of permanent atrial fibrillation and control of the ventricular rate by massive nontoxic doses of digitalis.

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THE USEFULNESS OF STRESS.—Stress is really an integral part of life. We set our whole pattern of life by our stress end-point. If we hit it exactly, we live dynamic, purposeful, useful, happy lives. If we go over, we break. If we stay too far under, we vegetate. It is the keynote in our whole personality and physiologic development in this competitive society in which we live. Stress is a fundamental factor and one that is very difficult to evaluate in the increasing incidence of hypertensive and coronary disease. I want to talk about stress as a beneficent, therapeutic friend, because I think in some instances, if it isn't used, it is just as dangerous in reverse as we now know bed rest to be. We learned, in the middle of World War II, all of the deconditioning phenomena that come from just putting a person to bed: negative calcium balance, negative nitrogen balance, loss of vitamins, deconditioning of the myocardium—all of the things that now we accept as the sound reason for early ambulation after disease or surgery. But you can't live always up to a stress point, and then on a given day when the magic page of the calendar turns, say, "I'm going to sit and rest and have a good time the rest of my life." You can't do it.—H. A. Rusk, M.D., Stress as a Therapeutic Friend, *The West Virginia Medical Journal*, November, 1958.

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CLINICAL JUDGMENT AND COMMON SENSE FOR THE CARDIAC PATIENT

Leonard J. Goldwater, M.D.

INTEREST in occupational activities for cardiac patients seems to be at an all-time high. Some enthusiastic investigators say that the best way to prevent heart disease is through severe physical exertion; others present evidence that work has a beneficial effect on the course of heart disease. Rehabilitation agencies bombard employers with the slogan "Hire the handicapped—it's good business," and cardiacs are included among the handicapped.

It may be perplexing to some physicians to reconcile such statements with the time-honored regimen of rest and with everyday reports in obituary columns. The question may properly be asked: "What is really known about relationships between occupation and heart disease?"

In 1941, systematic effort to obtain pertinent data was initiated with the establishment of the first cardiac work classification unit at Bellevue Hospital in New York City. At least 50 similar programs are now in operation across the country. Reports emanating from these units, particularly from the one at Bellevue Hospital, provide strong evidence in support of several important conclusions.

Since the number of persons in our population who have heart disease is not known, it is impossible to calculate any rates; nevertheless it is now safe to state that a large proportion of cardiacs can and do work. Many of these will exhibit objective as well as subjective evidence of improvement while in an employed status. Many will have found it possible to return safely to their original jobs after such cardiovascular episodes as a myocardial infarction, congestive failure, rheumatic activity, auricular fibrillation, or severe anginal attacks. A change in occupation or retraining for a new type of work is not necessary in most cases.

How do physicians judge whether or not a cardiac patient can safely undertake a particular job? The answer is the same as it is to many questions in medicine—by common sense and clinical judgment. There is no mechanical device that will tell the physician what to advise. Important features to be weighed include age, previous occupational activity, etiology of the heart disease, nature of pathological lesion, degree of cardiac reserve, blood pressure, rhythm, chronology of cardiac episodes, and need for and response to therapy. Knowledge of the physical and emotional stress of the patient's job obviously constitutes an indispensable part of the evaluation. Transportation problems and extraoccupational activities cannot be overlooked.

Physicians are well aware of the hazards in prognosticating the course of heart disease, particularly when the coronary arteries are involved. Too often there has been a tendency to "play it safe" by advising severe restriction of physical and mental activity. This may represent the safest or best course for the physician but may not be best for the patient. Statistical evidence is now available to show that the odds strongly favor the physician who advises cardiac patients to resume normal or close-to-normal activity. Clinical judgment, common sense, and courage comprise the key to management of the cardiac patient in relation to employment.

Professor of Occupational Medicine, School of Public Health and Administrative Medicine of the Faculty of Medicine, Columbia University, New York.

DIGEST OF ACTIONS OF HOUSE OF DELEGATES

A new book entitled "Digest of Official Actions of the American Medical Association House of Delegates—1846 thru 1958" is now ready for publication. It should be of great value as a reference work to all state, county, and local medical societies; all medical school administrative offices and libraries; and such organizations as the Association of American Medical Colleges, American College of Surgeons, American College of Physicians, and American Hospital Association. For members of the House of Delegates of the A. M. A. it will fill a long felt need. The subjects cover a wide range including medical education, hospitals, general practice, legislation, public relations, scientific assembly, World Medical Association, and many others. All policy actions of the House of Delegates are included. To determine the size of the first printing of this important book a special prepublication offer of $5 per copy is being made. To obtain this volume at that price, orders should be sent at once to the Circulation and Records Department, American Medical Association, 535 North Dearborn Street, Chicago 10, Illinois.

ORGANIZATION SECTION

PROCEEDINGS OF THE MINNEAPOLIS MEETING

ABSTRACT OF PROCEEDINGS OF THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION AT THE CLINICAL MEETING IN MINNEAPOLIS, DEC. 2-5, 1958

The actions of the House of Delegates at the Minneapolis Meeting are abstracted below so that the reader may have this information in digest form. **The recommendations of the various Reference Committees as reported in this abstract were adopted by the House of Delegates unless otherwise indicated.** *The official proceedings are made available in a booklet which was sent to all members of the House of Delegates and officers of the American Medical Association.*—ED.

The meeting of the House of Delegates in Minneapolis was called to order on Dec. 2, 1958, with an attendance of 192 delegates out of a possible 198.

Awards and Citations.—Dr. Lonnie A. Coffin of Farmington, Iowa, was named the 1958 General Practitioner of the Year after his selection by a special committee of the Board of Trustees for outstanding community service.

Remarks of the Speaker.—Dr. E. Vincent Askey, Speaker, made several comments relating to the business of the House and recommended that all resolutions be in the hands of the Speaker or the AMA Headquarter's office by noon of the day preceding the opening session of the House; that resolutions presented after that time be considered emergency business and referred to the appropriate reference committee for recommendation to the House.

The Reference Committee on Reports of Officers, to which the remarks of the Speaker were referred, approved in principle the suggestion of the Speaker regarding the introduction of resolutions and recommended that it be referred to the Council on Constitution and Bylaws for implementation. The committee concurred in the Speaker's analysis of the duties of delegates; it commended him for his untiring efforts to facilitate the business of the House of Delegates, for the continuing improvement in materials and procedures to aid the House in its deliberations, and for the dissemination of information and courtesies to alternate delegates.

The Reference Committees as appointed by the Speaker are as follows:

Amendments to the Constitution and Bylaws

DONOVAN F. WARD, *Chairman*, Iowa
NORMAN S. MOORE, New York
HENRY GIBBONS III, California
FRANK J. HOLROYD, West Virginia
L. O. SIMENSTAD, Wisconsin

Board of Trustees, Reports of

EUGENE P. PENDERGRASS, *Chairman*, Section on Radiology
R. T. HOLDEN, Washington, D. C.
P. STANLEY KNEESHAW, California
CHARLES G. HAYDEN, Massachusetts
JOHN M. GALBRAITH, New York

Credentials

A. A. LAMPERT, *Chairman*, South Dakota
SPENCER A. KIRKLAND, Georgia
STANLEY B. WELD, Connecticut
EDWARD TUOHY, Section on Anesthesiology
DURWARD G. HALL, Missouri

Executive Session

GORDON F. HARKNESS, *Chairman*, Section on Laryngology
DONALD CASS, California
PERCY HOPKINS, Illinois
VINCENT W. ARCHER, Virginia
PHILIP H. JONES, Louisiana

Hygiene, Public Health, and Industrial Health

WILLIAM F. BRENNAN, *Chairman*, Pennsylvania
GEORGE D. JOHNSON, South Carolina
ORWOOD J. CAMPBELL, Minnesota
EDWARD P. FLOOD, New York
KENNETH C. SAWYER, Colorado

Insurance and Medical Service

JOHN S. DETAR, *Chairman*, Michigan
THURMAN B. GIVAN, New York
J. W. HURFF, New Jersey
H. R. MCCARROLL, Section on Orthopedic Surgery
CHARLES L. HUDSON, Ohio

Legislation and Public Relations

FRANCIS T. HOLLAND, *Chairman*, Florida
PAUL D. FOSTER, California
J. ARNOLD BARGEN, Minnesota
G. C. ENGEL, Pennsylvania
LEO E. GIBSON, New York

Medical Education and Hospitals

GROVER C. PENBERTHY, *Chairman*, Section on Surgery, General and Abdominal
WESLEY W. HALL, Nevada
PETER M. MURRAY, New York
J. M. PFEIFFENBERGER, Illinois
MILLARD D. HILL, North Carolina

Medical Military Affairs

H. THOMAS MCGUIRE, *Chairman*, Delaware
ARCHIE O. PITMAN, Oregon
W. V. PIERCE, Kentucky
TRUMAN C. TERRELL, Texas
STUART T. ROSS, Section on Gastroenterology and Proctology

Miscellaneous Business

JOSEPH B. COPELAND, *Chairman*, Texas
G. B. WILDER, Indiana
CHARLES F. STROSNIDER, North Carolina
PHILIP P. THOMPSON, Maine
WILLIAM F. COSTELLO, New Jersey

Reports of Officers

EARL W. MERICLE, *Chairman*, Indiana
B. E. MONTGOMERY, Illinois
L. R. PYLE, Kansas
LOUIS W. JONES, Pennsylvania
L. R. DAME, Massachusetts

Rules and Order of Business

Ezra A. Wolff, *Chairman*, New York
E. Bryce Robinson Jr., Alabama
L. C. Theobold, New Hampshire
Everett P. Coleman, Illinois
George A. Earl, Minnesota

Sections and Section Work

H. Kenneth Scatliff, *Chairman*, Illinois
W. A. Showman, Section on Dermatology
K. B. Castleton, Utah
J. W. Read, Washington
Daniel H. Bee, Pennsylvania

Tellers

Edward E. H. Munro, *Chairman*, Colorado
Earl Malone, New Mexico
B. J. Sullivan, Wyoming
Milo Fritz, Alaska
Edward Rosenow, California

Sergeants at Arms

C. Paul White, *Master*, Illinois
Eustace A. Allen, Georgia
Eugenio Fernandez-Cerra, Puerto Rico

Distinguished Guests.—The following distinguished guests were introduced:

Hon. Orville L. Freeman, Governor of State of Minnesota
Maj. Gen. Oliver K. Niess, Surgeon General, Air Force
Mr. Henry Gregg, Vice President, American College of Apothecaries
Mr. Robert E. Abrams, Executive Secretary, American College of Apothecaries
Mr. Ray Amberg, President, American Hospital Association
Mrs. E. Bruce Underwood, President, Woman's Auxiliary to the American Medical Association

In Memoriam.—Dr. Ezra Wolff, Chairman of the Reference Committee on Rules and Order of Business, presented the following composite memorial resolution embodying the sentiment of a number of resolutions on the deaths of Dr. Warren W. Fury, Illinois, Dr. James Q. Graves, Louisiana, and Dr. Edward Gans, Montana:

Whereas, Several distinguished physicians, Delegates and former Delegates have, since its last meeting, been lost to this House through death, and

Whereas, It is fitting that we should officially record our sorrow at their passing, therefore be it

Resolved, That we interrupt our proceedings to stand for a brief moment in silence, as a mark of our respect, as a symbol of the void which their loss has left in this House, in the ranks of Medicine, and in the community, and as a token of the sympathy which we extend to their families and friends, and be it further

Resolved, That the Secretary be instructed to transmit suitable messages of condolence, together with copies of this resolution, to their families.

Address of the President.—Dr. Gunnar Gundersen, President, delivered his address, which was referred to the Reference Committee on Reports of Officers. Dr. Gundersen focused his address on major issues confronting the House of Delegates at the Minneapolis Meeting, listing among others (a) the health of the aged, indicating that medicine's programs in this field must be accelerated and given active leadership and implementation on the state and local level; (b) medicine's relations with so-called third parties, urging careful attention and thorough discussion of the report of the A. M. A. Commission on Medical Care Plans by every delegate and interested party; (c) the report of the Committee to Study A. M. A. Objectives and Basic Programs, asking for a thorough study and discussion of the findings and recommendations presented and pointing out that the action taken by the House would have an important bearing on future emphasis and direction of the Association's scientific, socioeconomic and liaison program; (d) the policy statement on the development of additional facilities for medical education, contained in the report of the Council on Medical Education and Hospitals (see The Journal, Nov. 15, 1958, page 1470), recommending that it receive the enthusiastic support of the entire profession, and that it be made widely known to correct past misinterpretations of the Association's viewpoint concerning the supply of physicians; (e) establishment of A. M. A. organizational pattern, recalling the recommendations of the Heller Report and the Hyland Committee concerning the line of authority of A. M. A. Councils. He believed that in the interest of sound administration, this matter should be reconsidered with a view to establishing an organizational pattern which would be internally consistent and would permit the Board of Trustees, on behalf of the House of Delegates, to provide appropriate supervision over all those activities for which it is now responsible for control of expenditures; (f) the international medical scene, urging that American medicine offer leadership and imagination in this area as a contribution to world understanding.

The Reference Committee stated that with respect to item (a) one clear line of progress was demonstrated by (1) the work of the A. M. A. Committee on Aging which had sponsored in September, 1958, a national planning conference to mobilize and coordinate medical society action in the health care of the aged; (2) the work of the Joint Council to Improve the Health Care of the Aged, and (3) the projected 1961 White House Conference on Aging which has been wholeheartedly supported by the Association. The committee in considering item (b) reiterated the extreme importance of continued study and efforts directed toward third parties involved in medical service. In regard to item (e), the committee indicated that it had heard much testimony regarding the suggestion to reconsider the Hyland Report, but recommended that the Report be not reconsidered at this time; it urged instead maximum liaison between the Board of Trustees and the Councils of the House of Delegates. The committee recommended (item f) expanded interest and support of the Association in the following proposals mentioned in the President's Address: (1) an "International Medical Year"; (2) medical missions; (3) an international medical film library, and (4) the special full support and hospitality to the Second World Conference on Medical Education to be held in Chicago by the World Medical Association next summer.

The Reference Committee stated that Dr. Gundersen set forth a clear line of progress for organized medicine to follow, taking into consideration the traditions for constantly improving the services and activities to meet both the changing needs of the public and the profession, without compromising its principles because of expediency. The committee highly commended the President for his over-all insight into the complex structure and problems of American medicine, and recommended that his untiring efforts on behalf of the medical profession be unanimously acclaimed by the House of Delegates.

Report of Board of Trustees.—The Speaker referred items in the report of the Board of Trustees as printed in the Handbook of the House of Delegates (see The Journal, Oct. 25, 1958, pages 1039-1086) as indicated below:

Reference Committee on Reports of Board of Trustees

Matters Referred by House of Delegates
Distinguished Service Award
Annual and Clinical Meetings
Reorganization

Publications of the A. M. A.
Library
Law Department
Committee on Medicolegal Problems
Division of Councils of Therapy and Research
Bureau of Medical Economic Research
Report of Business Manager
Records and Circulation Department
American Medical Education Foundation

The Reference Committee called particular attention to the excellence of these reports and to the large number and variety of important activities that are carried on daily at the A. M. A. headquarters. The committee indicated that too often the House forgets that what is done in a few hours at a meeting must be implemented over periods of weeks, months and even years. The committee commended the staff for the significant service performed during the periods covered by these reports.

Reference Committee on Hygiene, Public Health, and Industrial Health

Council on Mental Health
Council on Rural Health
Committee on Rehabilitation
Council on Industrial Health
Bureau of Health Education

Council on Mental Health.—The Reference Committee noted publication of the Council's report on Hypnosis in the September 13, 1958, issue of THE JOURNAL. The committee again stressed the importance of the alcoholism problem, expressing its approval of the Council's Committee on Alcoholism, particularly in its endeavor to educate the family doctor in the handling of this problem, and recommending wide dissemination of the Manual on Alcoholism. It commended the Committee on Alcoholism for its institutes as well as its exhibits and the service it maintains for physicians through the Classified Abstract Archive of the Alcohol Literature. The committee noted the plans of the new chairman of the Council's Committee on Narcotic Addiction to develop an exhibit on that subject.

The Reference Committee called attention to (a) the Joint Commission on Mental Illness and Health, Inc. which has a variety of studies in progress and plans to complete its work so that its final report may be submitted in the fall of 1959; (b) the planning for the Fifth Annual Conference of Mental Health Representatives of State Medical Associations stating that the report of the Fourth such conference would suggest that the Council is doing an excellent job and commended its activities, and (c) the enlistment of the Woman's Auxiliary at the state level in mental health activities, which has proved helpful in disseminating mental health information. The Reference Committee noted with satisfaction that the Council continues to work with the many other organizations active in the mental health field.

Council on Rural Health.—The Reference Committee endorsed the principles under which the Council works and noted with satisfaction the many activities which the Council is continuously carrying on. During the course of the hearing attention was called to the fact that a certain amount of apathy exists on the part of individual physicians in regard to cooperating with the various rural organizations. The committee recognized the great demand on the time of the individual physician, but nevertheless felt compelled to encourage the members of the Association to cooperate individually with the Farm Bureau, the Grange and similar organizations whenever opportunity and time permit.

Committee on Rehabilitation.—The Reference Committee noted with satisfaction the liaison of the Committee on Rehabilitation with the various other groups concerned with this problem, and endorsed the comprehensive viewpoint of what constitutes rehabilitation as outlined by this Committee in the August, 1957, issue of THE JOURNAL of the American Medical Association.

Council on Industrial Health.—The Reference Committee stated that the report outlined the many activities of the Council, its Congress of Industrial Health, and the activities of its several standing committees. The committee also called attention to continued activity in the survey of union health centers, the preparation of a preliminary guide for measuring work absence due to work illness and injury, and to the reports of the committees which have appeared from time to time in THE JOURNAL, and which will be continued. The committee commended the Council on the scope of its activities, indicating that it is serving well in supplying leadership in industrial health matters.

Bureau of Health Education.—The Reference Committee indicated that a great part of this report was concerned with the general problem of health and fitness. The first portion dealt with the activities of the President's Citizens' Advisory Committee on the Fitness of American Youth in which some of the members of the Bureau of Health Education participate. The committee stated that it is desirable that the Bureau continue its interests in this Committee and attempt to direct the activities along acceptable medical lines. It was noted that the Association has on its own for many years interested itself in the field of health and fitness, and has conducted National Conferences on Physicians and Schools. The committee agreed that there is considerable opportunity and need for local leadership by physicians in health and fitness matters, and recommended that physicians individually do what they can to supply this need. The committee called attention to the Bureau's report on its radio and television activities and its cooperation with committees and councils of the Association in disseminating health information via these media. These activities will be transferred in the near future to the new Communications Division.

Reference Committee on Legislation and Public Relations

Committee on Legislation
Washington Office
Department of Public Relations

Committee on Legislation.—The Reference Committee noted with interest the fact that the fifteen bills of a medical nature enacted into law by the 85th Congress, only one was opposed by the Association; that in its statements to Congress the Association supported the legislation or principle involved on nineteen occasions and was in opposition on only six occasions. The committee believed that these facts should be publicized to the American public and to the medical profession in order to help eliminate the charge that the Association is basically negative in its approach to legislative matters.

It noted with disappointment the failure of the Jenkins-Keogh Bills to be enacted by the 85th Congress, especially since passage was so nearly accomplished, and urged the Council on Legislative Activities (formerly the Committee on Legislation) to continue its efforts to secure enactment of this legislation in the forthcoming Congress.

The Reference Committee observed the passage of HR 9822, 85th Congress, providing for state Conferences on Aging culminating in a White House Conference on Aging in 1961, and agreed that reliable information concerning the problems of the aged is needed. It recommended that the House of Delegates urge the constituent medical associations to partake in these conferences to the fullest extent possible.

The Reference Committee complimented the state legislative keymen and urged the continuance of this activity and augmentation of it when necessary in the future; it also thanked the Woman's Auxiliary for its wonderful help in the legislative activities of the A. M. A.

Washington Office.—The Reference Committee noted with interest the report on the Association's Washington Office and hoped that its present reorganization will render its work even more effective.

Department of Public Relations.—The Reference Committee noted with pride the report of the Department of Public Relations, now known as the Communications Division, as it continues and expands its efforts to give both the public and the medical profession a positive, constructive view of the American Medical Association's policies, actions, and services. The program during this one-year period included numerous special projects, designed to achieve particular objectives, in addition to continuing activities aimed at channeling information to the press, television, radio, general public, state and county medical societies, individual physicians, and other organizations.

Reference Committee on Medical Military Affairs

Council on National Defense

Council on National Defense.—The Reference Committee endorsed the work of the Council and was impressed with the increasing scope of its activities in national emergency medical care planning, standby medical disaster programs, proposed mass immunization plans and other activities. The Council has continuously monitored developments in military medical activities, and has taken strong positive action to meet current problems. The recent merger of the Federal Civil Defense Administration and the Office of Defense Mobilization into the Office of Civil and Defense Mobilization was carefully followed by the Council. The delegation of medical and health services to the U. S. Public Health Service and other activities in civil defense have been likewise noted. The committee commended the Council for its sustained medical leadership and recommended that it continue to provide leadership concerning the provision of adequate medical care under disaster, both natural and that induced by enemy action.

Reference Committee on Sections and Section Work

Council on Scientific Assembly

Bureau of Exhibits

Council on Scientific Assembly.—The Reference Committee noted that it is reassuring that the Council is cognizant of the changes taking place in American medicine and has kept pace by holding frequent meetings and conferences during the year. The committee commended the Council for its several meetings with the Section Secretaries, with the Section Representatives and the Section Delegates. Such meetings stimulate interest in the activities of the parent body and aid in the production of worthwhile educational programs. In this connection the committee discussed the desirability of combining programs of two or more of the sections with the possibility of more panel discussions in their joint presentations. It commended this viewpoint to the Council for its consideration bearing in mind the thought that such an approach may aid in eliminating some of the "splintering" within the profession.

The committee called attention to the Council's efforts to bring in as exhibitors the prize winners of the younger group of science students, particularly the National Science Fairs and the Student A. M. A. exhibit.

It also noted and endorsed the request of the Council that more publicity be given to the awards made for Scientific Exhibits by presenting the gold medal winners to the public via television during the inaugural meeting.

A newer and growing part of the Council's activities is within the field of motion pictures and medical television; it was gratifying to learn that the film library has been reorganized. In accordance with the 1957 action of this House seven outstanding foreign-made films have been added to the library.

Bureau of Exhibits.—The Reference Committee noted that as a part of the Council's activities, the Bureau of Exhibits is doing a great service to the membership and through them to the public by making a concerted effort to publicize and distribute health and medical exhibits to several museums and various health fairs throughout the country. They present the doctor and his organization in a most commendable light to the public.

Supplementary Reports of Board of Trustees.—Supplementary reports (A-L) were presented to the House by the Chairman, Dr. Leonard W. Larson:

A. General Practitioner of the Year (see page 599).

B. Poliomyelitis Inoculation Program.—The Board reported that the Association continued its poliomyelitis inoculation and public education program during the past year in cooperation with county and state medical associations, the U. S. Public Health Service, the National Foundation for Infantile Paralysis and the Advertising Council. In spite of the success of this program, it was noted that fifty-four per cent of the population under 40 have not completed their series of inoculations and almost one-third of all children under five have not been inoculated. In the opinion of the Board this situation calls for renewed efforts on the part of county and state medical societies and their member physicians. It recommended that: (1) Each physician assume the responsibility for making certain wherever possible that all members of families he serves receive protection against poliomyelities by having the full three doses of polio vaccine; (2) State medical organizations arrange with state health departments for a joint effort to bring together county medical society representatives and representatives of county and city health departments for the purpose of discussing the need for joint study committees at the local level to survey the problems which may exist and to work jointly to solve them; (3) County medical societies meet with county and local health department representatives to create study committees to survey the problem of immunization as it may exist in the local area and develop and implement a satisfactory program to meet the local situation.

The Reference Committee on Hygiene, Public Health, and Industrial Health endorsed the report and expressed its opinion that continued activity at all levels directed toward educating the public to secure the minimum of three polio vaccine injections must be continued. It believed that wide dissemination of the recommendations of the Board would be helpful in this regard.

C. Fee Schedule of Bureau of Disability Determinations Under Old Age and Survivors Insurance Program.—At its 1958 annual meeting, the House of Delegates adopted a resolution (no. 23) which recommended that the Association advocate that the schedule of allowances by the Bureau of Disability Determinations be not lower than that adopted for the fee schedule of allowances under the Medicare program in the various states. The Board referred the resolution to its Committee on Medical Rating of Physical Impairment, which called attention to the fact that the Bureau of Disability Determinations, although concerned with the federal BOASI program, is actually a state agency. The resolution, therefore, requests the AMA to seek equalization of the fees paid for professional service by a department of a state agency with the fees paid for professional services under the Medicare program in the states.

The Committee believed therefore that the problem presented in Resolution 23 can and should be resolved at the state level, and that the distribution of this resolution to each constituent association might cause further confusion or create unnecessary problems unless accompanied by lengthy excerpts from reports by this committee on the OASDI program which were published in THE JOURNAL on June 1, 1957, and March 1, 1958.

For these reasons, the Committee on Medical Rating of Physical Impairment recommended to the Board that no action be taken to implement Resolution 23 and the Board concurred in this recommendation.

The Reference Committee on Insurance and Medical Service concurred in the recommendation of the Board. However, the House of Delegates adopted the following amendments to the Reference Committee Report:

"The appropriate committee of the AMA should be empowered to meet with representatives of the B. O. A. S. I. in Washington to develop a method by which each state medical society can reach an agreement directly with the B. O. A. S. I. concerning medical service rendered within each state under this program."

D. Proposed Establishment of State Committees on Rehabilitation.—In March, 1958, the Committee on Rehabilitation sent a questionnaire to each constituent medical association asking whether or not the society had a committee dealing with rehabilitation; it was learned that 24 of the 49 medical societies which responded had no committee. The Board, therefore, urged that each of the constituent medical associations create such a committee and that existing state committees on rehabilitation which limit their activities to liaison with the state Office of Vocational Rehabilitation be urged to expand their activities.

Objectives and guides recommended for the activities of a constituent medical society committee on rehabilitation are:

(1) The coordination of the rehabilitation interests and activities within the constituent medical society;

(2) The fostering of medical supervision of rehabilitation services and centers;

(3) The studying of the problems and interrelationships of the medical, social, educational, and vocational aspects of rehabilitation;

(4) The informing of the medical professional regarding the availability of information on rehabilitation services;

(5) The collection of information concerning the establishment of rehabilitation programs, their organization, methods of operation and utilization by physicians and patients;

(6) The encouragement of county medical society interest, and programs in rehabilitation.

In the process of carrying out this work the constituent medical society committee on rehabilitation might include within its activities the following:

(a) Review the rehabilitation programs of non-governmental and governmental agencies within the state or territory;

(b) Encourage the county medical society to (1) review the rehabilitation programs of their local agencies and foundations—including the availability of facilities and services; (2) determine the need for facilities and services, and (3) develop liaison with the various groups in the county and community concerned with rehabilitation;

(c) Encourage component societies to carry on activities necessary to develop sound rehabilitation services and programs.

The Board recommended that each constituent society urge the component county societies to initiate a survey of rehabilitation facilities within the county and community, and mentioned, as an aid in this activity, the "Guide to Surveying Rehabilitation Services," which can be secured from the Committee on Rehabilitation at AMA headquarters.

The Reference Committee on Hygiene, Public Health, and Industrial Health, considered this report together with the report of the Committee in the Handbook. The Reference Committee endorsed the recommendation that each constituent society establish a committee on rehabilitation to carry out at a local level the activities recommended.

E. Special Division of the AMA.—Resolution 48, introduced by Dr. Donald A. Charnock, California, at the San Francisco meeting in June, 1958, called for the establishment of a new special division of the American Medical Association to deal with the "(a) planning and execution of a long range program of preserving the present system of medical practice and the rights of the individual physician to practice medicine in the manner of his choice; (b) formulation of further plans to meet the medical needs of the American people under the voluntary free enterprise system; and (c) to offer positive advice and assistance to state and local societies as to courses of action to follow as specific threats to voluntary medical care arise in their areas."

In view of the extensive reorganization of the AMA activities already completed, and the plans now under way designed to achieve better coordination of our socio-economic activities, the Board of Trustees felt that the principal objectives of resolution 48 are being realized and that no further action was indicated by the House of Delegates at this time.

The Reference Committee on Reports of Board of Trustees agreed with the Board that the extensive reorganization of AMA activities completed and under way should obviate the necessity for the establishment of such a special division. It therefore recommended that no further action be taken by the House of Delegates in this regard at this time.

F. Admission of Children with Severe Communicable Diseases into United States.—Resolution 51, adopted by the House of Delegates in San Francisco in June, 1958, was referred by the Board to the Committee on Legislation. The resolution pointed out that as adopted children of American citizens, Korean children, some of whom are suffering from communicable diseases including tuberculosis, do not undergo any physical examination or quarantine. The resolution directed the Board of Trustees to petition Congress to amend Section 6 of Public Law 85-316 so as to control, in the interest of public health and welfare, the admission of children with severe communicable diseases into the United States. The Board stated that inquiry has been made of the appropriate offices of government and that action is being taken to resolve this problem.

The Reference Committee on Legislation and Public Relations heard evidence which pointed up the fact that some of these Korean children have tuberculosis which is antibiotic resistant, a fact which increases the seriousness of this public health threat. Therefore, it urged that every effort be made to hasten the implementation of resolution 51 and that this additional fact be brought to the attention of the United States Public Health Service, the State Department, and the Congress by the Board through its Council on Legislative Activities.

G. Progress Report of Joint Committee to Study Paramedical Areas in Relation to Medicine.—The Board submitted with its approval a progress report from the Joint Committee to Study Paramedical Areas in Relation to Medicine (appointed by the Board in July, 1957, to "consider how physician leadership can best be activated in relationships with professional and technical personnel closely related to medicine . . ." and further "to study the matter of liaison at the professional and technical level leading to the above objective").

The committee considers the paramedical areas to be composed of two major groups. One group is made up of individuals who hold advanced degrees, such as Ph.D.'s who are engaged in medical and allied teaching and who also participate directly or indirectly in the care of patients. The second group is comprised chiefly of the technical groups who are engaged in patient care under the more active direction and supervision of physicians.

The committee has established a two-phase study pattern which it considers suitable for its purposes. The initial phase of the study will be directed at those who hold a Doctor of

Philosophy degree. Phase two will be concerned with the paramedical technician-groups, which have less extensive formal academic training and yet are so essential to the total care of the total patient. Conferences with physician and technician groups will be held.

The Committee did not interpret the Board's motion establishing it to infer that this committee should attempt to study the many and varied proposals of certification, licensure, and registration that have beclouded similar studies before. It interpreted the Board's motion to be a sincere effort to improve the quality of medical care in America by bringing together the two often divergent interests that have evolved during the rapid progress in all fields of medical care, and to develop an atmosphere in which all will work harmoniously in the best interest of the patient.

The Reference Committee on Medical Education and Hospitals recommended acceptance of the report from the Joint Committee as information of the Committee's activities and as a report of progress of a continuing study.

H. AMA News Articles.—The Board of Trustees submitted a report regarding the opportunity which has been presented with the advent of the AMA News to publicize in advance important matters being processed for consideration by the House. The Board, after careful consideration, decided to authorize the advance stories on the report of the Commission on Medical Care Plans and of the Committee to Study AMA Objectives and Basic Programs. The Board then explained its thinking and asked the House of Delegates to endorse the point of view expressed. In pursuing this policy, the Board assured the House that every effort would be made to present material factually without editorial slanting of any kind. The objective is not to influence the House, but to promote an informed professional and public opinion.

The Reference Committee on Reports of Board of Trustees summarized the report as a request that the Board of Trustees be authorized to make available to the public and to the profession factual, judiciously-selected information on matters under consideration as well as on those on which definitive action has already been taken.

After careful consideration, the committee concluded that the advantages of the course of action suggested outweigh the disadvantages, and recommended that the House of Delegates concur in the course of action suggested by the Board in its supplementary report.

I. Progress Report of Committee on Amphetamines and Athletes.—The Board indicated that the Committee had anticipated that it would be able to present a final report to the Board at the Minneapolis Meeting. However, in view of the complexity of the program, the Committee recommended that its studies be continued for a period of several months with the expectation that a final report will be provided at the next annual meeting. The Board concurred in this recommendation.

The Reference Committee on Reports of Board of Trustees recommended that the Committee be authorized to continue its studies in the hope that it may be able to submit a final report for consideration at the next annual meeting.

J. Travel Insurance Coverage.—The Board submitted a report indicating that it had made arrangements to secure travel insurance covering the delegates and alternates as well as members of the councils and committees of the House and of the Board while traveling on official business of the Association. Details of coverage and effective dates will be sent to those individuals at a later date.

The Reference Committee on Reports of Board of Trustees stated that it had been informed that the amount of insurance to be obtained was $25,000 per person and that the cost to the Association in providing this coverage will amount to approximately $2,500 per year. The committee complimented the Board and recommended approval of its action.

K. Digest of Policy Actions of the House of Delegates.—In June, 1957, in response to a directive adopted by the House of Delegates at its Seattle meeting, the Board reported that it had authorized the preparation of an abstract of all policies of the House of Delegates from 1847 to the present time. The digest has now been completed and is ready for duplication and distribution. The digest, which will comprise 1,024 printed pages, will be available early in 1959 at $5.00 a copy. Also, to insure continuity, it will be brought up to date at periodic intervals.

The Reference Committee on Reports of Board of Trustees indicated that the Digest will contain an index which will make it convenient for any interested party to trace through the years the policy actions of the Association, and that prepublication orders will be solicited through THE JOURNAL of the American Medical Association and The AMA News.

The committee commended the Board of Trustees and the headquarters staff for the completion of this assignment, and stated that this material no doubt will be of inestimable value in future deliberations of the House of Delegates and in connection with the day-to-day activities of the personnel of the headquarters staff and the constituent and component medical societies.

L. Administrative Structure of the Association.—The Board of Trustees submitted an informational report outlining several major changes in the administrative structure of the Association. For administrative purposes, the Association's headquarters staff has been divided into the following seven divisions: (1) Business Division; (2) Law Division; (3) Communications Division; (4) Field Service Division; (5) Division of Scientific Publications; (6) Division of Socio-Economic Activities, and (7) Division of Scientific Activities.

The Board indicated that a great deal of consideration had been given to the Association's legislative program; a special committee had been appointed to consult at length with the Committee on Legislation and with all staff personnel involved in legislative activity. A fresh concept of the AMA's legislative activities has been evolved as a result of these lengthy deliberations, i.e., the new program would be composed of three main parts, closely interlocked. The Committee on Legislation was considered an important focal point around which AMA's legislative activities revolve. The Board asked that it assume important new duties in planning overall legislative programs and as part of this added emphasis, changed its name to Council on Legislative Activities. Another key element in the overall legislative program is the new Field Service Division which will be in close contact with the Council on Legislative Activities, its key men, and with state and county medical society headquarters all over the country. AMA's activities in Washington are considered one of the most important components of the overall legislative program, and the office in that city has been reorganized to fit in with the nation-wide program.

The Reference Committee on Reports of Board of Trustees believed that the centralization of responsibility and authority for administration of the affairs of the Association and the reorganization of the headquarters staff into seven divisions as outlined is a long and important step in the right direction. The committee believed also that the proposals with respect to legislative activities are capable of producing valuable results. However, it stated that it must be recognized that any reorganization pattern is doomed to failure unless staffed by competent and loyal people. For this reason and with full understanding of the economic considerations involved, it was the hope of the committee that the Board of Trustees and the Executive Vice President will lend every effort to employ and retain administrative personnel of the highest calibre.

The committee commended the Board and Dr. F. J. L. Blasingame, the Executive Vice President, for the far-sighted approach which they have taken in the formulation of reorganization plans and for the dispatch with which he has placed them into operation.

Statement on Dr. Austin Smith.—The Board of Trustees announced that Dr. Austin Smith tendered his resignation as Editor of THE JOURNAL of the American Medical Association to take effect as of December 15; the Board accepted this with deep regret. The Board expressed to Dr. Smith its sincere admiration for the work which he has done and its earnest conviction that he will continue to contribute effectively to the world of medicine.

The House of Delegates adopted the report of the Board without reference to committee.

Report of Judicial Council.—The Speaker referred the Report of the Judicial Council as printed in the Handbook of the House of Delegates (see THE JOURNAL, Oct. 25, page 1086) to the Reference Committee on Amendments to the Constitution and Bylaws.

The Reference Committee noted that the Council emphasized the autonomy of the county society and the fact that such autonomy imposes responsibilities. If medical societies fail to accept and discharge their obligations in matters of ethics, others will assume these obligations by default. The committee was confident that the "Opinions and Reports" of the Judicial Council relative to the interpretation of the Principles of Medical Ethics will be of invaluable assistance to the component societies in fulfilling these obligations. It felt that the Council aptly summarized its report in these words:

"The Judicial Council urges county and state societies to adopt critical attitudes toward their programs to uphold the honor and dignity of the profession of medicine. These programs must be based on a sound knowledge and understanding of ethical principles. As long as ethical principles are widely and sedulously observed, the reputation of the medical profession will be upheld. The reward will be commensurate with the service rendered in the observation of these ideals. On the other hand, if there is flagrant opinion or careless disregard of ethical principles, the reputation of the profession of medicine will suffer and its responsibilities and obligation will be usurped by others."

Report of Council on Constitution and Bylaws.—The Speaker referred the Report of the Council on Constitution and Bylaws as printed in the Handbook of the House of Delegates (see THE JOURNAL, Oct. 25, page 1117) to the Reference Committee on Amendments to the Constitution and Bylaws.

The Reference Committee stated that as the report was a summation of the year's activities of the Council it required no specific action by the House. The committee, however, wished to commmend the Council for its diligent work.

Special Report of Council on Constitution and Bylaws.—The special report was referred by the Speaker to the Reference Committee on Amendements to the Constitution and Bylaws.

New Book on Parliamentary Law.—The Council studied, and was impressed with, a new book entitled "Standard Code of Parliamentary Procedure" by Alice F. Sturgis. The Council did not feel, on the basis of its study alone, however, that the Association should substitute this book for Robert's Rules of Order as a parliamentary guide but urged that officials of the House and constituent and component societies familiarize themselves with this new book.

The Reference Committee reviewed the book and found it to be a complete, concise, simple, acceptable definition of common procedures written by a well qualified authority on parliamentary law. The committee concurred with the Council that various officials should familiarize themselves with this new book so that it may be discussed by the House, if it be so desired, at some future meeting.

Dues Exemption for Resident Physicians.—A resolution introduced at the June, 1958, meeting pointed out the inequity of limiting the dues exempt status of resident to five years after graduation. Many physicians enter residency training later than five years after graduation and it was felt that they, too, should be entitled to dues exemption during such training period. The House of Delegates agreed with this policy and referred the matter to the Council for implementation. The Council recommended a change in the Bylaws to carry out this policy.

The Reference Committee believed that the Council corrected a gross inequity by providing dues exempt status for residents who return to hospitals for special training five years or more after graduation, and concurred in the recommendation of the Council that Chapter III, Section 4 (C), be amended to read as follows:

"Section 4, Exemption.—The Board of Trustees may excuse the following members from payment of dues, provided they are fully or partially excused from the payment of local dues by their component and constituent associations, except as noted in (D) and (E), and provided the request for exemption is transmitted through the constituent association to the Executive Vice President of the American Medical Association.

". . . (C) Interns and resident serving in training programs approved by the Council on Medical Education and Hospitals of the American Medical Association."

Service Members.—At the June, 1958, meeting the Council recommended that Veterans Administration physicians be eliminated from eligibility for Service Membership. This recommendation was not approved by the House and the entire matter of Service Membership was again referred to the Council with the request "that the Council determine some alternative method of determining eligibility for Service Membership which will be equally applicable to all Service Memberships." The Council interpreted the action and discussions of the House as indicating a desire to find some method whereby Service Memberships will be available only to practicing physicians in the various government services who, primarily because of local resident restrictions, are unable to qualify for membership in the component society of their duty station. The Council is continuing to study this over-all problem but recommended adoption of a resolution at this time.

The Reference Committee stated that it was well aware of the many difficulties surrounding the question of Service Membership. It was in agreement with the desire expressed by the House last June that all Service Memberships should be subject to the same eligibility requirements. No distinctions should be made between the physicians in the Armed Forces, Public Health Service or Veterans Administration. The committee sincerely hoped that the Council on Constitution and Bylaws, by further study, would be able to find some method of enabling all physicians desiring American Medical Association membership to obtain such membership through a component society. The committee realized, however, that many component societies have eligibility requirements which make membership by physicians in the Armed Forces, Public Health Service, and Veterans Administration unavailable. This is a situation which only the component society, by the provisions of its own constitution and bylaws, can remedy. In order to call this situation to the attention of the component societies, the Reference Committee enthusiastically approved the suggestion made by the Council on Constitution and Bylaws in its Special Report and recommended the adoption of the following resolution:

"Whereas, It is the policy of the Association as indicated in its Constitution and Bylaws to condition Active Membership upon membership in a constituent association; and

"Whereas, Service Membership is a departure from this principle and should be granted only in unusual circumstances, such as ineligibility for local county society membership; and

"Whereas, It is sometimes impossible for physicians in the Armed Forces, Public Health Service, or Veterans Administration to obtain membership in constituent associations

because of certain component society residence or practice requirements; therefore be it

"**Resolved,** That the House of Delegates of the American Medical Association urge all component societies to make every effort to provide a type of membership for Armed Forces, Public Health Service, and Veterans Administration physicians which will enable them to become Active Members of constituent societies and of the American Medical Association."

AMA News–Medicorama.—Chapter III, Section 3 of the Bylaws provides for allocating a part of the subscription price of THE JOURNAL of the American Medical Association or one of the nine Special Journals out of AMA dues. The Council recommended that the AMA News and Medicorama publications be placed in the same category.

The Reference Committee believed that since the AMA News has become so popular with the membership, it should be placed in the same category as THE JOURNAL of the American Medical Association, so that it too may be included as a benefit from the payment of dues. The committee was in agreement with the recommendation of the Council and recommended the adoption of the following amendment to the Bylaws:

"Chapter III, Section 3. Dues and Scientific Journals.—Membership dues will include a subscription to THE JOURNAL of the American Medical Association unless a member requests any Scientific Journal published by the American Medical Association in lieu of THE JOURNAL of the American Medical Association. Membership dues will also include subscription to the AMA News."

Board of Trustees.—The Board of Trustees, in order to function more efficiently, recently revised its Standing Rules. In doing so, it found several instances in which those rules would be strengthened if certain changes are made in the Bylaws. The Council considered the changes desired by the Board and was in complete agreement with them.

The Reference Committee considered the changes recommended by the Board and was also in agreement with them. It recommended the adoption of the following amendments to the Bylaws:

A—Amend Chapter XVI, Section 2, to read as follows:

"(A) Immediately following the conclusion of the Annual Session, the Board shall organize by electing a chairman, vice-chairman, secretary and committees necessary to its needs.

"(B) The Board of Trustees, at its organization meeting, by resolution adopted by a majority of Trustees in office, may designate three or more Trustees to constitute an executive committee. The members of the committee shall serve until the next organization meeting of the Board and until their successors are elected and qualified. The executive committee shall have such powers and duties as may be defined from time to time by resolution of the Board of Trustees."

B—Amend Chapter XVI, Section 3 (A), to read:

"(A) There shall be at least four regular meetings of the Board of Trustees each calendar year to be held at such time and place as the Board shall determine. Notice of each regular meeting shall be given at least ten days before each such meeting."

C—Amend Chapter XVI, Section 3 (B), to read:

"(B) Special Meetings may be called at any time by the Chairman or at the request of five members of the Board. Notice shall be given at least five days before each such meeting. The notice shall specify the general purposes of and business to be transacted at the meeting, but other business may also be transacted."

D—Add a new Chapter XVI, Section 3 (C), to read:

"Six trustees shall constitute a quorum."

E—Add a new Chapter XVI, Section 5, entitled "Notice" to read as follows:

"Notice is given, if delivered in person, by telephone, by mail, or telegram. If mailed, such notice shall be deemed to be delivered when deposited in the United States mail, addressed to a Trustee (and other persons entitled to notice) at his address then appearing on the records of the Association, with postage prepaid, and if given by telegraph, shall be deemed delivered when the telegram is delivered to the telegraph company."

F—Add a new Chapter XVI, Section 6, entitled "Waiver of Notice" to read:

"Notice of any meetings and the object or business to be transacted at a meeting of the Board need not be given if waived in writing or by telegraph, cable, or wireless before, during, or after such meeting. Attendance at any meeting shall constitute a waiver of notice of such meeting except where attendance is for the express purpose of objecting to the transacting of any business because the meeting is not lawfully called or convened."

Report of Council on Medical Education and Hospitals.—The Speaker referred the report of the Council on Medical Education and Hospitals as printed in the Handbook of the House of Delegates (see THE JOURNAL, Oct. 25, page 1087) to the Reference Committee on Medical Education and Hospitals.

The Reference Committee expressed approval of the adoption of the document entitled "Functions and Structure of a Modern School of Basic Medical Sciences" as presented in Appendix A, believing that this statement should receive the approval of the medical profession.

The committee called attention to the section of the Annual Report on Medical Education in the United States and Canada, on page 1470 of the Nov. 15 issue of THE JOURNAL which indicates the position of the Council in supporting the development of additional facilities for basic medical education. The committee believed that this statement should receive the approval and support of the entire medical profession, so that it may correct misinterpretations of the Association's viewpoint regarding the supply of physicians and be adopted as the official policy of the American Medical Association as recommended by your President.

The committee recommended approval of the report and appendices of the Council and commended and congratulated the Council and its staff for the outstanding work it accomplished during the period of time encompassed by the report.

Report of the Council on Medical Service.—The report of the Council on Medical Service as printed in the Handbook of the House of Delegates (see THE JOURNAL, Oct. 25, page 1100) was referred by the Speaker to the Reference Committee on Insurance and Medical Service.

The Reference Committee reviewed the report of the Council and its eight committees and stated that if every member of the Association would digest this report there would be sudden death of the oft-repeated criticism that the Association is derelict in proper representation of its membership.

Committee on Aging.—The Reference Committee was cognizant of the completeness of the six-point program that can be used on a national, state, and local level. It noted that regional meetings were held in several states; that an AMA Planning Conference for Medical Society Action in the Field of Aging was held in Chicago in September, 1958; that a Joint Council to Improve the Health Care of the Aged was created and that the Committee on Aging had established liaison with many federal and national groups interested in the problems of the aged. Although the possibility of a flexible retirement program, had been considered by the Committee on Aging, the Reference Committee was of the opinion that the import of this problem is such that it deserves further consideration.

The Reference Committee commended the Committee on Aging for its thorough planning, the progress it has made, and its success in coordinating the medical, federal and state agencies so vital to the success of this program.

Committee on Federal Medical Services.—The Reference Committee commended the Committee on the thoroughness of its work and the excellence of its report and wholeheartedly reaffirmed the policy adopted by the House of Delegates in November, 1956, to the effect that ". . . Veterans' Administration facilities should be used only for the care of service-connected diseases and disabilities, and that the care of non-service connected conditions should be the responsibility of the individual, or, if he is medically indigent, of his community or state," and that ". . . until existing law is changed, priority for any non-service-connected care provided should go to those suffering from illnesses or disabilities which are economically catastrophic." The Reference Committee also approved of the resolution adopted by the House in June, 1958, to ". . . urge Congressional action to restrict hospitalization of veterans in Veterans Administration hospitals to those with service-connected disabilities." The Reference Committee suggested that the Association use every means possible in urging the establishment of, and adherence to, this principle by the Congress and the Veterans Administration.

The Committee approved the recommendation that medical societies at all levels develop committees to assist in guaranteeing VA hospital admissions for (1) service-connected cases, and (2) those cases where an illness constitutes an economic disaster which would justify care by a VA hospital. It urged continued study of the Hometown Medical Care Program for Veterans and suggested that the material derived from the Conference on Federal Medical Services, held on Dec. 1, 1958, be made available to the medical profession as soon as possible.

The Committee called particular attention to the estimation (Handbook, page 247; THE JOURNAL, Oct. 25, page 1105) that by 1986 the service-connected patient load will decrease to 23,600, of which 22,000 will be for psychiatric care, while the non-service connected load will increase to 304,500 if present admission policies are not altered. The committee suggested that each member of the House of Delegates obtain and study a copy of the House of Representatives Committee Print No. 222 for further enlightenment on future implications of the present policy of VA medical care.

It urged strongly that the deleterious effects of the present program upon the economy of the nation be brought to the attention of the Congress forcibly and repeatedly and requested the Board of Trustees to implement this suggested plan.

Committee on Indigent Care.—The Reference Committee called attention to the fact that some states desire the Vendor System of Payment while others do not, claiming that it is a type of socialized medicine. The House of Delegates at its June, 1958, meeting reaffirmed the principle of self-determination by the separate states of the allocation and method of payment of funds. Legislation was passed by the Congress and became effective Oct. 1, 1958, which returns this right to the individual states.

It has been shown that fees to physicians comprise only about ten per cent of the total cost of medical care for indigent patients. The Committee plans to gear its future help to assisting the various states which request assistance. The Reference Committee hoped that the medical profession will be an activating force to provide better liaison between all parties concerned. Physicians in the past have given valuable and untold service to the care of the indigent in their offices, in clinics, and in hospitals; however, state legislatures should be informed of the needs in establishing sufficient funds to care for the medical needs of the indigent.

The question of division of payments for services has been publicized and reasons have been given for the policies of the Bureau of Public Assistance on this subject. During the year the Committee published a number of detailed reports on this matter in THE JOURNAL.

Home care programs and care of the chronically ill are under careful study by the Committee. The study of these special programs and emphasis on better liaison between state medical societies and state welfare agencies received commendation by the Reference Committee.

Committee on Maternal and Child Care.—The present work of the Committee has been to assist in the organization of activity by medical societies in the field of perinatal care. Specific recommendations to physicians and others dealing directly with the problem are considered in Supplementary Report G (to appear in a future issue of THE JOURNAL).

The Reference Committee commended the work of the Committee on Maternal and Child Care, encouraged its plans, particularly on the county medical society level, and approved its report.

Committee on Medical Care for Industrial Workers.—It was noted that this Committee has carried a heavy burden of work which it has discharged with great skill; that its report which was historical in nature recounted the steps taken by the Committee from the first difficulties encountered by physicians due to alteration of policy by the UMWA Health and Welfare Fund, limiting free choice of physician by its beneficiaries, to the time of the directive to the Board of Trustees to institute a "broad educational program" on the subject of freedom of choice. The Committee was commended on its work.

Committee on Medical and Related Facilities.—The Reference Committee studied this report in detail, with particular interest in the work of the Physicians Placement Service. Of special significance were the tabulations (Handbook, page 273; THE JOURNAL, Oct. 15, page 1113) which indicated that of 2,215 community requests for physicians now on file, 76% are for general practitioners. It was stated that these figures offer mute evidence of the necessity of continued effort on the part of the Committee on Preparation for General Practice.

The Committee urged that the work of the Physicians Placement Service be continued with the recommendation that each state medical association attempt to make available descriptions of location opportunities, and noted with great satisfaction that many states now have in operation such a service which is functioning effectively.

The Reference Committee commended the Committee on Medical and Related Facilities on its work on the Hill-Burton study, the study on the Relationship between Physicians in Private Practice and Those Not in Private Practice, (group practice), and in particular on its preparation of "Recommended Guides and Standards for Medical Care in Nursing Homes."

Committee on Prepayment Medical and Hospital Service.—The Reference Committee noted that this was the final report of this Committee since, in June, 1958, it had been combined with another to form a new committee. Further reference to this subject is contained in Supplementary Report A (to appear in a future issue of THE JOURNAL).

Committee on Relations with Lay-Sponsored Voluntary Health Plans.—The Reference Committee reviewed the report and recommended that it be approved.

(to be continued)

AMERICAN MEDICAL EDUCATION FOUNDATION

Six State Societies Present Checks at Minneapolis Meeting

At a brief ceremony during the opening session of the house of delegates at the Minneapolis Clinical Meeting, AMEF received checks totaling $248,658.75. Receiving the checks for the foundation was board president, Dr. George F. Lull. The largest gift was from California, presented to Dr. Lull by Dr. Donald Cass of Los Angeles, chairman of his state's delegation. The check for $150,305.75 represented a gift from every California physician. Dr. Kenneth L. Olson, president of the Indiana Medical Association, delivered a check for $35,110, representing doctors' initial gifts from Indiana's recently inaugurated dues increase plan.

Other gifts included $19,608 from New York presented by Dr. Leo E. Gibson of Syracuse, president of the Medical Society of the State of New York; $25,000 from New Jersey, presented by Dr. William F. Costello of Dover, chairman of the New Jersey delegation; $9,977.50 from Utah presented by Dr. Kenneth B. Castleton of Salt Lake City, and $8,657.50 from Arizona, presented by Dr. Jesse D. Hamer of Phoenix. Dr. Lull noted the outstanding record of several of the states. "Three of the North Central states," he said, "have particularly distinguished themselves. Our host state, Minnesota, and North and South Dakota consistently have raised a high per capita gift. In some cases per capita contributions have even surpassed those of the dues increase states. Their voluntary campaigns provide a model of successful fund raising for medical education."

A. M. A. Presents $100,000 as 1958 Gift to Foundation

During the final session of the House of Delegates meeting in Minneapolis, it was announced that the A. M. A. Board of Trustees had voted to give $100,000 to AMEF. The contribution brought the total received at the 12th annual Clinical Meeting to $348,000.

PHYSICIAN JOINS STAFF OF THE COUNCIL ON DRUGS

Christian Wingard, M.D., joined the A. M. A. Headquarers staff on Feb. 2 as an Assistant Secretary of the Council on Drugs. Dr. Wingard will assist in the operation of the Council's drug evaluation program as well as with the over-all activities of the Council in the field of drug therapy. Formerly, Dr. Wingard was Associate Professor of Pharmacology at the University of Alabama Medical College and School of Dentistry, Birmingham, Ala.

BUREAU OF MEDICAL ECONOMIC RESEARCH

PERSONAL CONSUMPTION EXPENDITURES, 1947-1957 —NEW SERIES VERSUS OLD SERIES

Leonard W. Martin, Ph.D., Chicago

Revisions of its personal consumption expenditures series, made recently by the United States Department of Commerce, are now in press and will appear in a forthcoming National Income Supplement. Since the revisions go back about 11 years, this report, which they triggered, must be twofold in scope. A comparison of the old and revised data to reveal where the impact of the revisions has been greatest will be followed by a review of trends not only to see what they are but how the revisions altered or sustained them. When all the smoke is cleared away it will readily be seen that the consumption of medical care has increased substantially in the last decade. Yet the rises have been uneven, being great for hospitals and drugs while slight for dentists, physicians, and "all other" medical care. Apparently the demand for physicians' services, in a significant relative sense, has been quite stable for all of the almost 30 years for which data have been made available by the United States Department of Commerce. These data refer to expenditures people make as private consumers, not as taxpayers. They exclude governmental consumption of medical care.

In addition to providing some of the reasons for the revisions, this report will compare the old and new data for 1956 and then review the trends for 1947 through 1957. For these descriptions the three measures traditionally employed in this Bureau's publications on personal consumption expenditures

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have been used.[1] When the trends are measured in dollars they reflect inflation and growth. The expression of medical care as a percentage of all personal consumption expenditures, a second measure, provides clues to the presence or absence of increases in demand for some or all of medical care relative to the demand for all want-satisfying goods and services. Finally, the components of medical care can be percentaged for comparison in any one year or for several years through a third measure known as the medical care dollar.

The United States Department of Commerce does more than provide annual estimates of the gross national product, personal consumption expenditures, and other measures of the economy's performance. It periodically makes more exhaustive studies and constantly strives to improve its estimates through the use of newer and additional sources of information. Substantial revisions of personal consumption expenditures and certain other estimates were last made for the period 1952-1953. Their effects on previously published estimates were reviewed by this Bureau in its Bulletin 99.[1] Since the estimates made in 1957 in some cases diverge considerably from those made previously, revised figures will be published from 1946 or 1948 (for the medical care sector) through 1956.

The bases for the revisions are several. The 1954 Census of Business, through its data on retailing, provided a new bench mark for estimates of personal consumption expenditures on drugs. The new bench mark evidently indicated much greater consumption of drugs than had been revealed by the bench mark in the 1948 Census of Business and extrapolations from it. Hence the revision of the series for drugs is based on newer and presumably better data. The revisions of the estimates for expenditures on physicians' and dentists' services were based on tabulations of data from the Internal Revenue Service, particularly for the years 1953 to 1956. Use of such additional data, as will be seen, affected the estimates for dentists more seriously than those for physicians. The hospital expenditures' series was revised to include care in nursing homes, not previously covered. Other medical care components apparently experienced no notable revisions. The effects of these revisions are of interest and concern to all students of medical economics.

More Dollars for Medical Care

The year 1956 was selected for comparing the old series with the revised series for two reasons: it is the latest year for which comparisons can be made and it is the year for which the difference between the two series was greatest. In dollar terms the new series for medical care was 1,942 million dollars higher than the old in that year. Although this difference accounted for 87.5% of the 2,240 million dollars net difference for all personal consumption expenditures in 1956, its magnitude should not be interpreted to mean that upward revisions were made only or almost only in the medical care sector. Some sectors experienced downward revisions; others upward. Recreation, for example, was adjusted upward by 1,317 million dollars. Moreover, in 1955 the upward revision of medical care expenditures accounted for only 52% of the net revision for all personal consumption expenditures.

The dollar figures for the old series, the revised series, and differences between them are presented in table 1 for expenditures on all personal consumption, medical care and its five chief components, and five other areas of personal consumption. Among the particular components of medical care expenditures, the difference in 1956 between the old and the new series was greatest for drugs, 984 million dollars (1,885 million old series and 2,869 million new series). Dentists' services likewise experienced a substantial revision, rising 555 million dollars from 1,070 million, old series, to 1,625 million, new series. For all other components of medical care the upward revision was only 403 million dollars, including 201 million for physicians' services and 67 million for hospitals.

Drugs, Dentists Revised Most

Although dollar measures may be deceptive and may tend to exaggerate differences, the revisions were clearly substantial according to another of the measures commonly employed—percentage of all personal consumption expenditures. In terms of that measure medical care expenditures were revised in 1956 from 4.5% old series to 5.2% new series, as shown in figure 1. A change of 0.7 percentage point may seem small indeed, but it was considerable for a sector which by 1948 had risen only 0.5 percentage point since 1929. In that historic year medical care comprised 3.7% of all personal consumption expenditures; in 1930, 4.0%[1]; and in 1948, 4.2%.

The change in percentages between the old and the new series was greatest in 1956 for those components which had experienced the greatest changes in dollar amounts. Thus expenditures on drugs as a percentage of all personal consumption expenditures were revised upward from 0.7 to 1.1%, accounting for 0.4 of the 0.7 percentage point difference between the 4.5 and 5.2% of the old and the new series respectively. Estimates of expenditures on dentists' services rose from 0.4 to 0.6%, providing another 0.2 percentage point; and those on physicians' services rose from 1.2 to 1.3%, accounting for the remaining 0.1 percentage point. Hospitals and "all other" (medical products and appliances used by patients, other professional services, and health and accident insurance) were the two components undergoing no change in the estimates of the two series for 1956 according to this measure.

When the percentaging is limited to the components of medical care expenditures—what we also call the medical care dollar—a different measure results. Such a measure cannot in any way reflect the growth in medical care expenditures, for the sum of the components always equals 100%. When one component grows more rapidly than the others, one or more of the others must decline. In comparing the two series for 1956 by this measure, we find that the revision from old to new series was extensive enough so that the percentages for both drugs and dentists rose, while those for the other three components fell. Thus, as a portion of the medical care total, as shown in figure 1, drugs rose from 15.6 to 20.4% and dentists' services from 8.8 to 11.6%. In contrast, physicians' services fell from 27.0 to 24.7%, hospitals from 28.5 to 25.0%, and "all other" from 20.1 to 18.3%. Actually the components retained the same rank with but one exception—drugs moved ahead of "all other," from fourth to third.

Revision of the personal consumption expenditures series has had a very substantial impact upon the medical care sector. By 1956, the last year for which there are two estimates, the new series was 16.0% higher than the old in terms of dollars; the difference between the old and the new as a percentage of all personal consumption expenditures was nearly as great. Since the revisions in 1956 were sharpest for drugs and for dentists' services and occurred largely in them, these two components rose as percentages of the medical care total while the other three components declined.

TABLE 1.—*Selected Personal Consumption Expenditures: Old Series, Revised Series, and Differences, 1947-1957* (Millions of Dollars)*

	Medical Care											Total, Column (3) Through (12)	Total Personal Consumption Expenditures
Yr., Series (1)	Total Medical Care (2)	Physicians' Services (3)	Hospitals (4)	Drugs and Sundries (5)	Dentists' Services (6)	All Other Medical Care (7)	Alcoholic Beverages (8)	Tobacco (9)	Recreation (10)	Personal Care (11)	Jewelry (12)	(13)	(14)
1947													
Old	6,817	2,020	1,397	1,313	784	1,303	8,020	3,869	9,352	2,253	1,463	32,374	164,973
Revised	6,817	2,020	1,397	1,313	784	1,303	8,020	3,869	9,352	2,253	1,463	32,374	165,409
Difference													436
1948													
Old	7,385	2,203	1,591	1,358	833	1,400	7,930	4,147	9,603	2,286	1,435	32,786	177,609
Revised	7,749	2,327	1,621	1,466	900	1,435	7,900	4,155	9,808	2,311	1,436	33,359	178,313
Difference	364	124	30	108	67	35	−30	8	205	25	1	573	704
1949													
Old	7,702	2,312	1,750	1,350	857	1,433	7,730	4,252	9,801	2,250	1,360	33,104	180,598
Revised	8,051	2,338	1,772	1,555	920	1,466	7,680	4,272	10,122	2,324	1,353	33,802	181,158
Difference	349	26	42	205	63	13	−50	20	321	65	−7	698	560
1950													
Old	8,276	2,435	1,975	1,406	869	1,591	7,880	4,401	10,768	2,355	1,385	35,065	194,026
Revised	8,741	2,427	2,037	1,719	961	1,597	7,790	4,432	11,278	2,452	1,370	36,063	195,013
Difference	465	−8	62	313	92	6	−90	31	510	97	−15	998	987
1951													
Old	8,780	2,528	2,167	1,516	888	1,681	8,200	4,701	10,961	2,488	1,477	36,607	208,342
Revised	9,440	2,519	2,248	1,979	997	1,697	8,060	4,743	11,704	2,626	1,465	38,038	209,805
Difference	660	−9	81	463	109	16	−140	42	743	138	−12	1,431	1,463
1952													
Old	9,397	2,676	2,308	1,569	996	1,848	8,735	5,092	11,374	2,573	1,561	38,732	218,328
Revised	10,172	2,657	2,486	2,058	1,098	1,873	8,530	5,153	12,257	2,786	1,577	40,475	219,774
Difference	775	−19	88	489	102	25	−205	61	883	213	16	1,743	1,446
1953													
Old	10,107	2,815	2,635	1,615	943	2,099	8,885	5,310	11,832	2,728	1,560	40,422	230,542
Revised	11,072	2,840	2,729	2,137	1,234	2,132	8,610	5,365	12,892	2,973	1,611	42,523	232,649
Difference	965	25	94	522	291	33	−275	55	1,060	245	51	2,101	2,107
1954													
Old	10,598	2,913	2,852	1,631	975	2,227	8,830	5,228	12,219	2,893	1,606	41,374	236,513
Revised	11,925	3,109	2,962	2,163	1,406	2,285	8,500	5,218	13,256	3,151	1,682	43,732	238,025
Difference	1,327	196	110	532	431	58	−330	−10	1,037	258	76	2,358	1,512
1955													
Old	11,272	3,070	3,130	1,747	1,017	2,308	9,050	5,373	13,034	3,182	1,688	43,599	253,971
Revised	12,827	3,189	3,229	2,473	1,508	2,428	8,700	5,350	14,220	3,399	1,835	46,331	256,940
Difference	1,555	119	99	726	491	120	−350	−23	1,186	217	147	2,732	2,969
1956													
Old	12,106	3,269	3,451	1,885	1,070	2,431	9,360	5,681	13,844	3,581	1,724	46,296	267,160
Revised	14,048	3,470	3,518	2,869	1,625	2,566	8,990	5,638	15,161	3,726	1,920	49,483	269,400
Difference	1,942	201	67	984	555	135	−370	−43	1,317	145	196	3,187	2,240
1957													
Old							Discontinued						
Revised	15,051	3,693	3,884	3,098	1,705	2,671	9,140	6,074	15,908	3,963	1,894	52,030	284,442

* Data from Office of Business Economics, United States Department of Commerce: old series, 1947-1951, National Income: Supplement to the Survey of Current Business, pp. 206-208, 1954; old series, 1952-1956, Survey of Current Business 37:21 (July) 1957; revised series of total personal consumption expenditures, Survey of Current Business 38:5 (July) 1958; revised series of selected items, to be published.

Difficulties in Measuring Changes

During the past 11 years, medical care expenditures have, like all other expenditures, been subject to the forces of inflation and growth. These characteristics are revealed emphatically by the dollar series from 1947 to 1957, as shown in table 1. Estimated expenditures on medical care measured in dollars have risen year after year. According to

the revised series these expenditures were slightly more than twice as great in 1957 (15,051 million dollars) as in 1947 (6,817 million dollars); their magnitude in 1956 according to the old series (12,106 million dollars) was a little less than double that of 1947 (6,817 million dollars). Since the price index for medical care and drugs rose less than 50% between 1947 and 1957, it follows that there was a genuine increase in real consumption of medical care between 1947 and 1957. In these respects, however, the behavior of medical care expenditures was similar to that for all personal consumption expenditures. Since all dollar series for these years were influenced by the combination of growth and inflation we have been experiencing, it is difficult to separate the growth from the inflation and to relate the growth in medical care to that for all private consumption.

There are distinct advantages to measuring medical care expenditures as a percentage of all personal consumption expenditures. In this way the inflationary forces influencing the dollar values for both medical and all expenditures are largely cancelled out. Moreover, it is extremely important to know which among the various sectors of consumption are growing and which are declining relative to others. In this way we can tell how consumers shift their demands from those areas

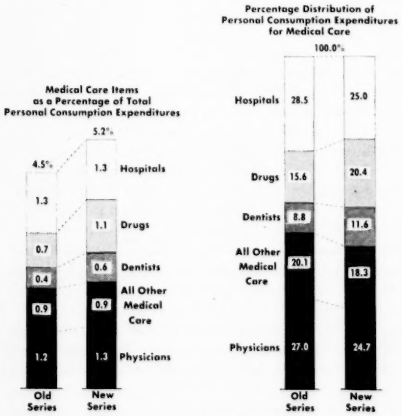


Fig. 1.–Some comparisons of old series with new series for 1956 (data from Office of Business Economics, U. S. Department of Commerce).

declining as a portion of all consumption expenditures to those growing in this sense. This measure, percentage of all personal consumption expenditures, contributes much toward the attainment of these ends.

The behavior of medical care and its chief components as percentages of all personal consumption expenditures is traced for both the old and the new series for three selected years in figure 2 (see table 2 also). Two relationships are emphasized in this chart–the differences between the old and the new

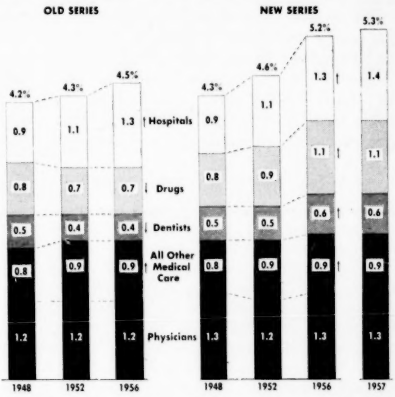


Fig. 2.–Some comparisons of old series with new series for 1948, 1952, and 1956; medical care expenditures as percentage of personal consumption expenditures (data from Office of Business Economics, U. S. Department of Commerce).

series and the rise between 1948 and 1957. Since medical care rose as a percentage of all personal consumption expenditures from 4.1% in 1947 (4.2% in 1948) to 5.3% in 1957, in a period when all consumption was rising, its increase was truly substantial. Among the medical care components expenditures for hospital services displayed the greatest rise during this period. The differences between the old and the new series, however, as noted above, were most substantial for drugs and for dentists' services. Expenditures for hospital services differed not at all between the old and the new series for this measure but accounted for one-half the rise from 4.1% to 5.3% that occurred between 1947 and 1957. Expenditures on drugs and dentists' services amounted to six-sevenths of the difference between the old (4.5%) and the new (5.2%) series in 1956, as already mentioned, but contributed only one-third of the rise in medical care expenditures as a percentage of personal consumption expenditures during the last 11 years.

Hospitals and Drugs Lead Rise

Hospitals.–The 1947 data for medical care were the same for both the old and the new series; they were slightly below both the old and the new for 1948. The 0.1 percentage point rise between 1947 and 1948 for the old series (table 2) was accounted for by hospitals' expenditures. These expenditures,

however, as a percentage of all personal consumption expenditures were the same for the old and for the new series in 1948, 1952, and 1956. Thus, as has been mentioned, they played no role in the 0.7 percentage point difference between the old (4.5%) and the new estimates (5.2%) for medical care in 1956. Yet, over the years, the 0.1 percentage point rise from 1947 to 1948, was continued with another 0.2 from 1948 to 1952, 0.2 more from 1952 to 1956, and a further 0.1 from 1956 to 1957. Thus this component rose 0.4 percentage point from 0.9% in 1948 to 1.3% in 1956 by either series and 0.6 percentage point from 0.8% in 1947 to 1.4% in 1957. As a percentage of all personal consumption expenditures, the hospital component accounted for half the 1.2 percentage point rise, from 4.1% to 5.3%, in medical care expenditures over these eleven years.

a rising factor from 0.8 to 1.1%. Even more important than the change in quantities is the change in direction of this component from a declining to a rising portion of all personal consumption expenditures, indicating a shift in demand toward rather than from this sector of consumption. Estimated quantities, though subject to some margin of error, are usually expected to show direction of movement correctly. When a revision alters the direction it is considered drastic. Nevertheless the magnitude of the revision—from 0.7% to 1.1%—is itself important, for it contributed four-sevenths of the difference between 4.5% and 5.2% in the two series for 1956. The rise from 0.8% in 1947 to 1.1%

TABLE 2.—*Selected Personal Consumption Expenditures as Percentages of Total Personal Consumption Expenditures: Old and Revised Series, 1947-1957**

	Medical Care											Total† Columns (2) Through (13)
Yr., Series (1)	Total Medical Care (2)	Physicians' Services (3)	Hospitals (4)	Drugs and Sundries (5)	Dentists' Services (6)	All Other Medical Care (7)	Alcoholic Beverages (8)	Tobacco (9)	Recreation (10)	Personal Care (11)	Jewelry (12)	
1947												
Old	4.1	1.2	0.8	0.8	0.5	0.8	5.2	2.3	5.7	1.4	0.9	19.6
Revised	4.1	1.2	0.8	0.8	0.5	0.8	5.2	2.3	5.7	1.4	0.9	19.6
1948												
Old	4.2	1.2	0.9	0.8	0.5	0.8	4.5	2.3	5.4	1.3	0.8	18.5
Revised	4.3	1.3	0.9	0.8	0.5	0.8	4.4	2.3	5.5	1.3	0.8	18.7
1949												
Old	4.3	1.3	1.0	0.7	0.5	0.8	4.3	2.4	5.4	1.3	0.8	18.3
Revised	4.4	1.3	1.0	0.9	0.5	0.8	4.2	2.4	5.6	1.3	0.7	18.7
1950												
Old	4.3	1.3	1.0	0.7	0.4	0.8	4.1	2.3	5.5	1.2	0.7	18.1
Revised	4.5	1.2	1.0	0.9	0.5	0.8	4.0	2.3	5.8	1.3	0.7	18.5
1951												
Old	4.2	1.2	1.0	0.7	0.4	0.8	3.9	2.3	5.3	1.2	0.7	17.6
Revised	4.5	1.2	1.1	0.9	0.5	0.8	3.8	2.3	5.6	1.3	0.7	18.1
1952												
Old	4.3	1.2	1.1	0.7	0.4	0.9‡	4.0	2.3	5.2	1.2	0.7	17.7
Revised	4.6	1.2	1.1	0.9	0.5	0.9	3.9	2.3	5.6	1.3	0.7	18.4
1953												
Old	4.4	1.2	1.1	0.7	0.4	0.9	3.9	2.3	5.1	1.2	0.7	17.5
Revised	4.8	1.2	1.2	0.9	0.5	0.9	3.7	2.3	5.5	1.3	0.7	18.3
1954												
Old	4.5	1.2	1.2	0.7	0.4	0.9	3.7	2.2	5.2	1.2	0.7	17.5
Revised	5.0	1.3	1.2	0.9	0.6	1.0	3.6	2.2	5.6	1.3	0.7	18.4
1955												
Old	4.4	1.2	1.2	0.7	0.4	0.9	3.6	2.1	5.1	1.3	0.7	17.2
Revised	5.0	1.2	1.3	1.0	0.6	0.9	3.4	2.1	5.5	1.3	0.7	18.0
1956												
Old	4.5	1.2	1.3	0.7	0.4	0.9	3.5	2.1	5.2	1.3	0.6	17.3
Revised	5.2	1.3	1.3	1.1	0.6	0.9‡	3.3	2.1	5.6	1.4	0.7	18.4
1957												
Old						Discontinued						
Revised	5.3	1.3	1.4	1.1	0.6	0.9	3.2	2.1	5.6	1.4	0.7	18.3

* See footnote, table 1.
† Since percentages for the selected expenditures were not forced, rounding differences may exist between them (columns 2 and 8 through 12) and their totals (column 13). Total personal consumption expenditures are 100% in all instances.
‡ Forced so that sum of components equals percentage for all medical care.

Drugs.—Continuing to measure components of medical care as a percentage of all personal consumption expenditures, we find the percentage the same for drugs in both series in 1947 and 1948. But from there on the resemblance between the old series and the new series ends. The old series indicates that from 1948 to 1956 (or 1947 to 1956) expenditures on drugs declined from 0.8 to 0.7% of all personal consumption expenditures. In sharp contrast the new series presents this component as in 1957 provided one-fourth of the 1.2 percentage point rise in medical care as a percentage of all personal consumption expenditures between 1947 and 1957.

Dentists' Services.—Expenditures on dentists' services were much like those for drugs. They were the same (0.5%) for both series in 1947 and 1948. They also declined according to the old series and rose according to the new. The magnitudes, however, were not quite as great. But again the change in direction indicated by the data is serious. Between 1948 and 1956 these expenditures fell from 0.5% to 0.4% of all personal consumption expendi-

tures according to the old series, but rose from 0.5% to 0.6% according to the new. Consequently they accounted for two-sevenths of the difference between the old and the new series for 1956—4.5% and 5.2%—and for one-twelfth of the rise of 1.2 percentage point from 4.1% to 5.3% between 1947 and 1957.

"*All Other.*"—There was no difference for "all other" medical care expenditures between the old and the new series; but this component experienced a 0.1 percentage point rise from 0.8 to 0.9% between 1948 and 1952. Hence it contributed nothing (like hospital expenditures) to the difference between the old and the new series in 1956, but contributed one-twelfth of the rise in medical care as a percentage of all personal consumption expenditures between 1947 and 1957.

Stable Demand for Physicians' Services

The chief change in estimated expenditures on physicians' services between the old and the new series and over 11 years occurred between the two estimates for 1948. The new series estimated that physicians' services received 1.3% of all personal consumption expenditures, whereas the old had estimated 1.2%. The same relationship between the old and the new series existed in 1956 as in 1948. Hence the physician component contributed one-seventh of the difference between the old and the new series in 1956. By reason of this change and for this reason only the physician component likewise contributed 0.1 percentage point or one-twelfth of the rise that occurred between 1947 and 1957 in medical care as a percentage of all personal consumption expenditures. The impressive feature of the physician component is that unlike every other it has within both series of estimates not risen since 1948. According to the old series it remained 1.2% of all personal consumption expenditures from 1948 through 1956 and according to the revised series it was 1.3% of all personal consumption expenditures in 1948 and in 1957 and in almost all intervening years. The constancy of this component in the face of rises elsewhere, according to the latest estimates, is quite impressive.

We have pointed not only to the constancy of expenditures on physicians' services as a percentage of all personal consumption expenditures (1947-1956, old series, and 1948-1957, new series) but additionally to the rise of 0.1 percentage point between the old and the new series. On this latter basis it might be argued that a very slight increase in demand for physicians' services has occurred. In reviewing this component back to 1929, however, it should be observed that for 29 years the percentage of all personal consumption expenditures allocated to physicians' services (private but not governmental demand) has experienced irregular oscillations between 1.2 and 1.3%, as in 1948-1952 and 1952-1957 in the new series. Thus it must be concluded that the increase in demand for physicians' services, in the sense of a shift toward them and away from other forms of want-satisfaction, must be meager indeed. In brief, this empirical evidence lends little support to the contention, oft repeated, that an increasing population and rising incomes necessarily result in increased demands for physicians' services. The slight increase in quantity of services (as distinguished from value of services) that would result from the lesser rise in physicians' fees than in other prices since 1935-1939 (and presumably since 1929) would surely be more than offset by the increase in physician productivity since then.

Measured in terms of the percentage of personal consumption expenditures, the revised series raised the estimates for drugs substantially, dentists' services somewhat, and physicians' services slightly. Over the past 11 years the medical care component has risen as a portion of all personal consumption expenditures with hospitals' expenditures accounting for half the rise, drugs some of it, and dentists' services, physicians' services, and "all other" slightly and equally. Thus all components have participated in the rise. The physician sector, however, has been especially stable despite the baby boom, rising incomes, the rising proportion of older persons, and the expectation among many that these phenomena inevitably result in a shift to greater consumption of physicians' services.

Physicians Less, Hospitals More of Medical Dollar

The combination of forces reflected in the preceding measures—dollars and percentage of all personal consumption expenditures—takes on new light when the third measure, the medical care dollar, is employed. Inflation, increased allocation of consumption to medical care by revisions of the data, and the long term trends acquire additional light when this third measure is employed. It was mentioned earlier that a measure such as this is incapable of expansion—the parts, the components of medical care, have to be distributed over 100 cents.

The stable position which physicians' services has retained among all personal consumption is reflected by a declining share of the medical care dollar. As shown in figure 3, the physicians had 30 cents of the medical care dollar in 1947-1949; they had only 24 cents in 1957. The physicians' declining portion of the medical care dollar represents a continuation if not an acceleration of a trend which has been apparent since 1929. Then their share was 33 cents; in 1935-1939 it was 32 cents; in 1957, as already mentioned, it was 24 cents. The revised data—the percentages on the right side of figure 1 are also cents in the medical care dollar for 1956—also accentuated this trend, for the physician share of the medical care dollar, as shown in figure 1, fell through the revision from 27.0 to 24.7% (or from 27.0 to 24.7 cents) in 1956.

As the physician share of the medical care dollar has declined, the hospital share has risen. The latter's share (fig. 3) rose from 21 cents in 1947-1949 to 26 cents in 1957. It was only 14 cents in 1929 and 17 cents in 1935-1939. Again the trend has been

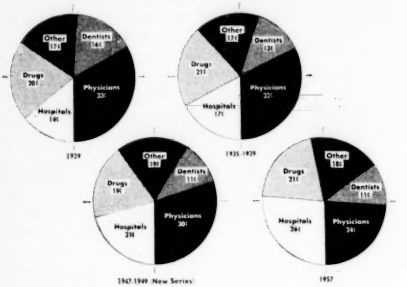


Fig. 3.—Division of medical care dollar (data from Office of Business Economics, U. S. Department of Commerce).

continuous, and this time upward, since 1929. The revised data in this case did not accentuate the trend; neither did they change it. As shown in figure 1, the hospital share in 1956 was 28.5% according to the old series but only 25.0% according to the new. Nevertheless, even with the revision, hospitals now receive the largest portion of the medical care dollar.

Other Shares Stable

Dentists' services over the last decade have held a stable portion of the medical care dollar. Their share (fig. 3) in 1947-1949 was 11 cents; it was the same in 1957. The revision of the data tended to maintain (or restore) this stable position. In 1956, as shown in figure 1, the dentists' share was only 8.8% according to the old series but 11.6% under the new. Even with this revision to maintain the trend since 1947-1949, the longer term trend for the dentists' share is downward. In 1929, as shown in figure 3, they had 16 cents and in 1935-1939 13 cents of the medical care dollar.

The drug share has also displayed substantial stability, this time over the longer period, fluctuating only between 19 and 21 cents over the 29-year period, 1929 to 1957 (fig. 3). Again the stability was bolstered by the revised data, since the old data (table 3) showed a decline between 1947-1949 and 1956, while the new data showed a slight rise. In 1956 (fig. 1) the old data indicated that the drug share was 15.6%, while the new showed that it was 20.4% of the medical care dollar; in 1947-1949 it was 19 cents. It had been 20 cents in 1929 and 21 cents in 1935-1939. The slight rise between 1929 and 1935-1939 in one instance and again a rise between 1947-1949 and 1957 in another instance might suggest that drugs are less sensitive to minor fluctuations in business than are dentists' and physicians' services, if in fact such short-run forces are reflected at all in these long-run comparisons.

Since the "all other" component includes insurance overhead plus profits and there has been substantial expansion of medical, health, and accident insurance, one might have expected the share of this component to grow. Although the insurance overhead has increased from 108 million dollars in 1929 to 1,064 million dollars in 1957, the growth in dollar expenditures on all of the "all other" components has been only as rapid as that for all medical care expenditures. Consequently the "all other" share of the medical care dollar in 1957, 18 cents, was barely higher than it was in 1929 (17 cents) and slightly lower than it was in 1947-1949 (19 cents). The old series showed a slight rise, according to this third measure, between 1947-1949 and 1956 (table 3), but the revision reversed this, leaving the "all other" component in 1957 slightly lower than it was in 1947-1949. Among the three areas of accident and health insurance in 1957 the overhead portion was greatest for income-loss, 37.2%; next highest for hospital services, 35.3%; and lowest for physicians' services, 27.5%. Even so the last seems relatively high and may be subject to revision in the future. The latter two items might be considered as additions to personal consumption expenditures for hospital and physicians' services but we have made no attempt to make them additions.

TABLE 3.—*Percentage Distribution of Personal Consumption Expenditures for Medical Care: Old and Revised Series, 1947-1957**

Yr., Series	Physicians' Services	Hospitals	Drugs and Sundries	Dentists' Services	All Other Medical Care
1947					
Old	29.6	20.5	19.3	11.5	19.1
Revised	29.6	20.5	19.3	11.5	19.1
1948					
Old	29.8	21.5	18.4	11.3	19.0
Revised	30.1†	20.9	18.9	11.6	18.5
1949					
Old	30.0	22.5	17.5	11.1	18.9
Revised	29.1†	22.0	19.3	11.4	18.2
1950					
Old	29.4	23.9	17.0	10.5	19.2
Revised	27.7†	23.3	19.7	11.0	18.3
1951					
Old	28.8	24.7	17.3	10.1	19.1†
Revised	26.7	23.8	21.0	10.5†	18.0
1952					
Old	28.5	25.5	16.7	9.6	19.7
Revised	26.1	24.5†	20.2	10.8	18.4
1953					
Old	27.8†	26.1	16.0	9.3	20.8
Revised	25.7†	24.6	19.3	11.1†	19.3
1954					
Old	27.5	26.9	15.4	9.2	21.0
Revised	26.1	24.8	18.1	11.8	19.2
1955					
Old	27.2	27.8	15.5	9.0	20.5
Revised	24.9	25.2	19.3	11.7†	18.9
1956					
Old	27.0	28.5	15.6	8.8	20.1
Revised	24.7	25.0	20.4	11.6	18.3
1957					
Old			Discontinued		
Revised	24.5	25.8	20.6	11.3	17.8

* See footnote, table 1.
† Forced so that total medical care equals 100%. Total medical care equals 100% in all series.

Summary

Review of the latest series of personal consumption expenditures—purchases by private individuals rather than by government—reveals a substantial change in the data for 1956 and a considerable rise in the consumption of medical care in the last decade. The rise has not been uniform, however, among all components of medical care. It was greatest for hospitals and drugs. For the other three chief components, as the critical measure—percentage of all consumption expenditures—shows, it was slight. Indeed the demand for physicians' services relative to the demands for all want-satisfying goods and services has been quite stable for all of the almost 30 years for which data are available. These increases in personal consumption expenditures on, but not costs of, medical care, however uneven, are of interest and concern to all students of medical economics.

References

1. Dickinson, F. G., and Raymond, J.: Economic Position of Medical Care, 1929-1953, Bulletin 99, American Medical Association, Bureau of Medical Economic Research, Chicago, 1955.

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

SUPPLEMENTARY LIST—CORRECTIONS

In the annual Internship and Residency Number of THE JOURNAL, *Oct. 4, 1958, incomplete or inaccurate data were presented. The correct entries are as follows:*

Approved Residencies and Fellowships

INTERNSHIPS

Name of Hospital and Location	Control	Total Beds	Number of Patients Admitted	Outpatient Service	Autopsy Percentage	Length of Program (Months)	Affiliated Service	Beginning Stipend (Month)	Number and Type of Internships	Code Number
St. Francis Hospital [1-3-4], 114 Woodland St., Hartford 5, Conn.	Church	578	20,265	Req	49	12	No	150-225/FM	13 Rotating General	08511
Kings County Hospital Center [1-3-4]-X59, 451 Clarkson Ave., Brooklyn 3, N. Y.	City	3,167	57,842	Req	33	12	No	71/FM	114 Rotating General 22 Straight Medicine 10 Straight Surgery 3 Straight Pediatrics 1 Straight Pathology	42611 42632 42633 42634 42630

ANESTHESIOLOGY

Name of Hospital	Location	Chief of Service	Total Anesthetics	Inhalation Anesthetics	First Year Residencies Offered [2]	Total Residencies Offered [2]	Length of Approved Program (Years)	Beginning Stipend (Month)
Veterans Admin. Hospital [1-3]	Boston (Jamaica Plain)	D. L. Mahler	4,760	1,514	1	2	2	...
Cambridge City Hospital [1-3]	Cambridge, Mass.	F. C. Callahan	3,849	2,575	2	2	2	160
St. Elizabeth Hospital [1-3]	Youngstown, Ohio	A. J. Bayuk	11,040	9,459	1	2	2	300
University of Utah College of Medicine Affiliated Hospitals[5]	Salt Lake City	C. M. Ballinger	20,867	16,427	6	13	2	275

[5] Thos. D. Dee Memorial Hospital, Ogden, Utah; Holy Cross Hospital, St. Mark's Hospital, Salt Lake County General Hospital, Shriners Hospital for Crippled Children, and Veterans Admin. Hospital, Salt Lake City.

DERMATOLOGY

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	First Year Residencies Offered [2]	Total Residencies Offered [2]	Length of Approved Program (Years)	Beginning Stipend (Month)
Temple University Medical Center Skin and Cancer Hospital Unit	Philadelphia	C. S. Wright	641	26,144	4	12	1	100

NEUROLOGY

Name of Hospital	Location	Chief of Service	Inpatients Treated	Autopsies	First Year Residencies Offered [2]	Total Residencies Offered [2]	Length of Approved Program (Years)	Beginning Stipend (Month)
Los Angeles County Hospital [1]	Los Angeles	E. R. Ives	3,460	282	1	3	2	246

OBSTETRICS-GYNECOLOGY

Name of Hospital	Location	Chief of Service	Residencies Approved	Inpatients Treated	Autopsies	First Year Residencies Offered [4]	Total Residencies Offered [5]	Length of Approved Program (Years)	Beginning Stipend (Month)
Mayo Foundation	Rochester, Minn.	A. B. Hunt	OBG	4,089	3	4	12	3	175
Ancker Hospital [1-3,28]	St. Paul	E. Kasper	OBG	1,068	1	1	1	1	220
Aultman Hospital [1-3]	Canton, Ohio	H. I. Keck	OBG	5,758	4	3	5	3	275

ORTHOPEDIC SURGERY

Type of training acceptable to Board: A—Adult Orthopedics; C—Children's Orthopedics; F—Fractures. Residency programs in the following hospitals have been approved by the Council and the American Board of Orthopedic Surgery, through the Residency Review Committee for Orthopedic Surgery, as offering acceptable training in adult orthopedics, children's orthopedics, and fractures. Training in the basic sciences is given either as an integral part of these services or as a separate course. Services collaborating in an integral plan of training are designated by a program number.

Residents completing their training in these hospitals are eligible for full certification by the American Board of Orthopedic Surgery, including children's orthopedic surgery.

Name of Hospital	Location	Chief of Service	Type of Training	Program Identification	Inpatients Treated	Autopsies	First Year Residencies Offered [4]	Total Residencies Offered [5]	Beginning Stipend (Month)
University of Missouri Medical Center [1-3]	Columbia, Mo.	W. J. Stewart	ACF	61	..	..	..	1	...
Veterans Admin. Hospital [1-3]	St. Louis	O. P. Hampton, Jr.	AF	61	419	3	1	3	...

PEDIATRICS

Name of Hospital	Location	Chief of Service	Inpatients Treated	Autopsies	First Year Residencies Offered [4]	Total Residencies Offered [5]	Length of Approved Program (Years)	Beginning Stipend (Month)
Children's Hospital [1-3]	San Francisco	H. E. Thelander- E. B. Shaw	964	15	2	4	2	175

RADIOLOGY

Name of Hospital	Location	Chief of Service	Number of X-Ray Examinations	Number of Radium Treatments	Number of Deep X-Ray Treatments	Number of Superficial X-Ray Treatments	First Year Residencies Offered [4]	Total Residencies Offered [5]	Beginning Stipend (Month)
San Francisco Hospital	San Francisco	L. H. Garland- A. J. Williams	45,348	20	2,215	105	..	6	260

SURGERY

The residency program in the following hospital has been approved by the Council, the American Board of Surgery and the American College of Surgeons, through the Conference Committee on Graduate Training in Surgery, for THREE years of training, designed to qualify the trainee for examination by the American Board of Surgery as a Group II candidate.

Name of Hospital	Location	Chief of Service	Inpatients Treated	Autopsies	First Year Residencies Offered [4]	Total Residencies Offered [5]	Beginning Stipend (Month)
Aultman Hospital [1-3]	Canton, Ohio	W. M. Dowlin	6,389	50	6	12	275

The residency program in the following hospital has been approved by the Council, the American Board of Surgery and the American College of Surgeons, through the Conference Committee on Graduate Training in Surgery, for additional training following the completion of an approved residency. The American Board of Surgery will give credit for time spent in this service toward fulfillment of the practice requirements for Group II candidates.

Babies' Hospital [1-3]	New York City	T. V. Santulli	924	21	..	1	333

THORACIC SURGERY

Name of Hospital	Location	Chief of Service	Inpatients Treated	Autopsies	First Year Residencies Offered [4]	Total Residencies Offered [5]	Length of Approved Program (Years)	Beginning Stipend (Month)
Medical College of Georgia Hospitals		R. G. Ellison	220	19	..	2	2	250
Eugene Talmadge Memorial Hospital	Atlanta, Ga.	.....	...	..	..	..	..	...
Battey State Hospital	Rome, Ga.	.....	...	..	..	..	..	...

MEDICAL NEWS

CALIFORNIA

Dr. Rothman Honored by French Society.—Dr. Theodore Rothman, a psychiatrist on the faculty of the University of Southern California School of Medicine, Los Angeles, has been named an honorary member of the French Society of the History of Medicine. Dr. Rothman has made a study of Montaigne and read a paper on the 16th century essayist at Montpellier, France, in September.

Personal.—Dr. Henry B. Bruyn has been appointed director of student health services at the University of California, Berkeley, effective July 1. Dr. Bruyn is associate professor of pediatrics and medicine, University of California Medical School, an appointment which he will continue on a part-time basis. ——Dr. Harry A. White, Los Angeles general practitioner, was installed as president of the Queen of Angels medical staff Dec. 16, succeeding Dr. James N. O'Neill. Installed with Dr. White were physicians Roscoe B. Bigler, vice-president, and Leonard G. Powsner, secretary and treasurer.—— Dr. John W. Bisenius, of Los Angeles, has been named to the newly-created post of director of medical education at Queen of Angels Hospital.

COLORADO

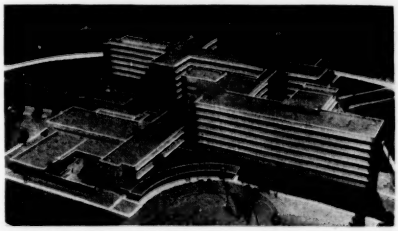
Dr. Crowle Wins Award.—Alfred J. Crowle, Ph.D., research microbiologist, Colorado Foundation for Research in Tuberculosis, Denver, has been awarded the annual James Alexander Miller fellowship by the New York Tuberculosis and Health Association of New York City. The fellowship is for the 1959-1960 year in the amount of $7,000 and will support Dr. Crowle's studies in immunology and tuberculosis. Dr. Roger S. Mitchell, director of the Colorado Foundation, said that Dr. Crowle was selected for the honor in nation-wide competition with many researchers in tuberculosis and other chest disorders. The fellowship was created by friends and former patients of the late Dr. Miller, an authority on chest diseases in the New York area prior to his death in 1949. Dr. Crowle is also an instructor in the department of microbiology of the University of Colorado School of Medicine.

DISTRICT OF COLUMBIA

Dedicate Research Center.—The Medical Research Center at Brookhaven National Laboratory was dedicated on Dec. 16, following a two-day conclave of deans of medical colleges. The dedicatory address was delivered by Dr. Shields Warren, pathologist at New England Deaconess Hospital and professor of pathology, Harvard Medical School, Boston. John A. McCone, chairman of the Atomic Energy Commission, also spoke at the ceremonies. The $6,500,000 center includes a tank-type reactor, a 48-bed hospital for research patients, and laboratories for studies in biochemistry, medical physics, microbiology, pathology, and physiology. The reactor is the first in this country to be designed specifically for medical research purposes.

FLORIDA

Open New Teaching Hospital and Clinics.—The University of Florida's new 10-million-dollar Teaching Hospital and Clinics were opened for the admission of patients Oct. 20 in Gainesville, Dr. Russell S. Poor, provost of the J. Hillis Miller Health Center, which includes the Teaching Hospital and Clinics, the colleges of medicine, nursing, health related services, and pharmacy, and the Cancer Research Laboratory, has announced. The eight-story building was opened for tours by the public and alumni Oct. 18-19. Initially only about 100 beds have been opened. Dr. George T. Harrell, dean of the College of Medicine, explained it is planned that an additional 50 beds will be opened every three months until all 400 beds are available for use, with further expansion geared to the selection of staff. It was necessary that the hospital and clinics open this fall to accommodate the first class of students of medicine and nursing, now beginning their third year of studies. Patients will be admitted only on referral by the family physician, but patients under the care of public health departments may be referred by the medical officer in charge. All referrals will be made to the chief of staff or the



The J. Hillis Miller Health Center, University of Florida College of Medicine and Teaching Hospital, Gainesville.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

chief of a special service. The new structure contains more than 400 acute and ambulant beds, 28 operating rooms, and 22 outpatient clinics in various medical services and specialties. Rehabilitation facilities are reportedly the most extensive available in the South. The ambulant wing, featuring 26 special rooms for patients who do not require constant nursing and medical care, has day beds instead of the traditional hospital bed. These rooms feature television, dial phones, and are otherwise furnished and decorated as a modern Florida motel room. The Teaching Hospital and Clinics will become the permanent home of the College of Nursing, which heretofore has had its headquarters in the Medical Sciences Building. About 25% of the floor space in the hospital and clinics is devoted to teaching functions.

GEORGIA

Medical Assembly in Atlanta.—The 1959 Atlanta Graduate Medical Assembly will be held Feb. 16-18 at the Convention Hall, Atlanta Biltmore Hotel. The 14 speakers (and their specialists), who will present topics ranging from allergy to nuclear medicine, are:

Dr. Stewart Wolf, Oklahoma City (internal medicine); Dr. Ethan Allan Brown, Boston (allergy); Dr. Edward H. Rynearson, Rochester, Minn. (endocrinology); Dr. William G. Sauer, Rochester, Minn. (gastroenterology); Dr. William Dameshek, Boston (hematology); Dr. B. Marden Black, Rochester, Minn. (surgery); Dr. Warren H. Cole, Chicago (surgery); Dr. Denton A. Cooley, Houston, Texas (cardiovascular surgery); Dr. Averill A. Liebow, New Haven, Conn. (pathology); Dr. Charles M. Nice, Jr., New Orleans (radiology); Dr. Vincent J. Collins, New York City (anesthesiology); Dr. Curtis J. Lund, Rochester, N. Y. (obstetrics and gynecology); Dr. A. Ashley Weech, Cincinnati (pediatrics); and Dr. Lee E. Farr, Upton, Long Island (nuclear medicine).

Luncheon conferences and afternoon round-table discussions are planned. Dr. Nice will lecture on "Dixieland Jazz" at a luncheon conference Feb. 17. Advanced registration fee is $15. For registration and information write the Atlanta Graduate Medical Assembly, 875 W. Peachtree St., N. E., Atlanta 9, Ga. The assembly, in cooperation with the Georgia Academy of General Practice, is acceptable for 15 hours in category I.

ILLINOIS

Chicago

New Medicohistorical Society.—The University of Chicago History of Medicine Society has been founded for the purpose of promoting interest in the history of medicine, membership being open to all interested persons in the university community. A series of lectures will be presented by faculty members and guests, and regularly scheduled seminars on topics in the history of medicine will be conducted each week by Ilza Veith, Ph.D.

Hospital News.—Michael Reese Hospital and Medical Center has announced the appointment of Dr. Maurice S. Goldstein to head the department of metabolism and endocrinology at the Medical Center's Research Institute, succeeding Dr. Rachmiel Levine, who resigned to devote additional time to two other positions at Michael Reese as director of medical education and chairman of the department of medicine.

KENTUCKY

Dr. Kornhauser Dies.—Sidney I. Kornhauser, Ph.D., professor and chairman of the department of anatomy, University of Louisville School of Medicine from 1922 to 1958, died in his sleep Jan. 1, aged 71. Born in Cleveland, he received his A.B., University of Pittsburgh in 1908, his M.A. from Harvard University, Boston, in 1910, and a Ph.D., there in 1912. Executive Secretary of Faculty, 1939-1948, he served as chairman of the Commission on Biological Stains. Dr. Kornhauser was the author of numerous articles on microscopic anatomy.

MASSACHUSETTS

Tufts Medical Alumni Lecture.—The annual Tufts Medical Alumni Lecture will be given Feb. 18, 7:30 p. m., at Tufts Medical School in Posner Hall, 200 Harrison Ave., Boston, by Dr. Edward H. Dennen, professor of clinical obstetrics and gynecology, Cornell Medical School and director of the department of obstetrics at the New York Polyclinic Hospital. Dr. Dennen will speak on "Prerequisites for Instrumental Delivery." Medical students and physicians are invited.

Personal.—At the meeting of the Board of Registration in Medicine, Department of Civil Service and Registration, Commonwealth of Massachusetts, held Oct. 30, the following officers were elected as of Nov. 1: Dr. David W. Wallwork, North Andover, secretary; and Dr. Roger T. Doyle, Boston, chairman. Dr. Robert C. Cochrane, Boston, the former secretary, resigned as of Oct. 31.——Dr. Jack Richard Ewalt, Commissioner of Mental Health in Massachusetts and clinical professor of psychiatry at Harvard Medical School, has been named professor of psychiatry to serve simultaneously the Massachusetts Mental Health Center as director and the Harvard Medical School as professor, effective Dec. 1. In his post at the Harvard Medical School and at the Massachusetts Mental Health Center (formerly the Boston Psychopathic Hospital) Dr. Ewalt succeeds Dr. Harry C. Solomon, professor of psychiatry, emeritus. Dr. Solomon, in turn, has been appointed to Dr. Ewalt's post as Commissioner of Mental Hygiene.——Dr. Howard M. Payne, formerly professor of medicine, Howard University, Washington,

D. C., and a member of the board of directors of the National Tuberculosis Association, has been appointed superintendent, Middlesex County Sanatorium, Waltham, Mass.

MICHIGAN

Establish Professorship in Medicine.—Wayne State University College of Medicine, Detroit, has received a $30,000 gift from the National Foundation of Rochester (Mich.) to establish the William H. McGregor professorship in medicine. William H. McGregor founded the National Twist Drill and Tool Co., now in Rochester, in 1903. He served several terms as Wayne County Clerk and was president of the Detroit Board of Education in 1898. The National Foundation of Rochester was formed by a nephew, Howard McGregor Sr., former president of National Twist Drill and Tool Co., and a grand-nephew, Howard McGregor Jr., now president of the company.

MISSOURI

Grant for Mental Retardation Program.—The Saint Louis University School of Medicine has been awarded a grant of $250,000 by the Children's Bureau of the Department of Health, Education and Welfare, United States Public Health Service, for the establishment of a mental retardation program at Cardinal Glennon Memorial Hospital for Children. The grant award is for a five-year period with allotments of $50,000 annually. The program will be under the direction of Dr. James P. King, director of the department of pediatrics and chief-of-staff, Cardinal Glennon Memorial Hospital, and will be correlated with the Bureau of Maternal and Child Health of the Missouri Division of Health. The award money will be used to establish salaries, equipment and travel expenses for personnel for the diagnosis, program planning, and treatment of mentally retarded children. Personnel will include the appointment of a full-time pediatrician who will serve as director, an assistant pediatrician, a psychologist, social worker, and public health nurse. The major part of the programs will be an outpatient facility, and will be coordinated with the pediatric medical clinic and the rehabilitation clinics of the out-patient department at the hospital. The function of the new program will be state-wide. The personnel of the program will develop institutes, workshops, and other educational programs throughout the state in conjunction with the Missouri Division of Health.

MONTANA

Dr. Harris Named Secretary-Treasurer.—Because of the sudden death of Dr. T. R. Vye, secretary-treasurer of the Montana Medical Association, Dr. William E. S. Harris, Livingston, who was elected to the office of assistant secretary-treasurer at the last meeting of the House of Delegates, will serve as acting secretary-treasurer until the next meeting of the House of Delegates at the Interim Session of the association which will be held in Helena, April 3-4. At that meeting the nominating committee will submit its nominations for the office of secretary-treasurer and assistant secretary-treasurer for the remainder of the current administrative year.

NEBRASKA

New Unit for University Hospital.—Ground-breaking ceremonies for Unit III of University Hospital and the University of Nebraska College of Medicine, Omaha, were held Dec. 27, and work on the unit was started immediately. Dean James P. Tollman, who was master of ceremonies, introduced Chancellor Clifford Hardin and Governor-Elect Ralph Brooks, who addressed the audience. The new unit is planned for use as expanded outpatient clinics and supportive activities, along with modern radiology and pathology departments and classroom areas. Omahans attending the ceremonies included Mayor John Rosenblatt; Philip Milo Bail, Ph.D., president of Omaha University; Dr. Stanley N. Truhlsen, president of the University of Nebraska College of Medicine Alumni Association; and Dr. Frederick G. Gillick, dean of the Creighton University College of Medicine.

NEW YORK

Radiological Meeting in Nassau.—The Radiological Society of the State of New York will hold a Bahamas Spring Conference March 6-13, aboard the S. S. Nassau and at the Fort Montagu Beach Hotel, Nassau. Each of the following speakers will present three lectures in his designated field:

Pediatric radiology, Dr. John Caffey, New York City.
General radiology, Dr. Barton R. Young, Philadelphia.
Radiation therapy, Dr. Maurice Lenz, New York City.
Radioactive Isotopes and protection in radiology, Dr. Richard H. Chamberlain, Philadelphia.

Dr. John F. Roach, president of the society, will open the conference in Nassau, March 10. The advanced registration for this meeting closes Feb. 15. For information write Dr. Mario C. Gian, 610 Niagara St., Buffalo 1, N. Y., Secretary-Treasurer.

Lectures for Laity in Syracuse.—A series of public lectures on the medical sciences will be held at the State University Upstate Medical Center, Syracuse, starting Feb. 8. The seven lectures, designed for the layman, will be held each Sunday afternoon at 3 p. m. in the auditorium of the Medical College, 766 Irving Ave. Dr. Carlyle Jacobsen, president of the Upstate Medical Center, said they were being staged as part of the center's observance of its Dedication Year which marks completion and dedication of the large new Basic Sciences Building.

Admission is free and all lectures will be followed by a general question-and-answer period. The schedule is as follows:

Feb. 8—"Cancer," by Wilfred W. Westerfeld, Ph.D., professor of biochemistry.
Feb. 15—"Obesity," by Dr. S. Jay Tepperman, professor of experimental medicine.
Feb. 22—"High Blood Pressure," by Dr. Gordon K. Moe, professor of physiology.
March 1—"Food and Health," by John M. McKibbin, Ph.D., professor of biochemistry.
March 8—"The Aging Process," by Dr. Richard H. Lyons, professor of medicine.
March 15—"Electrical Activity of the Brain," by Dr. James B. Preston, assistant professor of physiology.
March 22—"The Position of Psychiatry in the Changing American Society," by Dr. Richard H. Phillips, associate professor of psychiatry.

New York City

Name Head of Department of Surgery.—Dr. David State, former director of surgery, Cedars of Lebanon Hospital, Los Angeles, has been appointed professor and chairman of the department of surgery at the Albert Einstein College of Medicine at Yeshiva University. For the past six years, Dr. State has been clinical associate professor of surgery at the University of Southern California Medical School, Los Angeles. He formerly was director of the Cancer Detection Center at the University of Minnesota Hospitals, Minneapolis.

University News.—Dr. Paul Dell, Hospital of St. Anne, Paris, France, presented "The Humoral Influence on the Cerebral Cortex and Reticular Formation" Dec. 10 at the Albert Einstein College of Medicine of Yeshiva University.——The eighth annual Sigmund Pollitzer Lecture of the New York University Post-Graduate Medical School was given by Dr. Aaron B. Lerner on Jan. 20. Dr. Lerner is professor of dermatology at Yale University School of Medicine, New Haven, Conn. The title of his talk was "The Pituitary, the Pineal, and Pigmentation."

NORTH CAROLINA

Dr. Hightower Wins Surgery Award.—Dr. Felda Hightower, associate professor of surgery, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, was awarded the first annual Arthur M. Shipley Medal of the Southern Surgical Association at its recent meeting at Boca Raton, Fla. The award was for the best paper presented at the 1957 meeting. The title was "Regeneration of the Mucosa of the Colon Following Its Removal in Short Segments."

University News.—The private medical library of the late Dr. J. C. Pass Fearrington, of Winston-Salem, has been donated to the University of North Carolina Division of Health Affairs Library, Chapel Hill. The collection of books and journals numbers some 3,000 volumes and is valued at an estimated $28,000. The Division of Health Affairs Library serves the University Schools of dentistry, medicine, nursing, pharmacy, public health and N. C. Memorial Hospital.

PENNSYLVANIA

Heart Funds Available.—The Pennsylvania Heart Association has announced that its deadline for applications for its research funds will be March 1. Dr. Norman M. Wall, Pottsville, chairman of the Research Committee, said that all applications before this time would be favorably reviewed. Special committees in the large medical centers will review the applications for heart research funds and others that need special review will be considered. Questions on this research should be addressed to Dr. Norman M. Wall, 310 W. Market St., Pottsville, Pa., or the Pennsylvania Heart Association, Second and Market Streets, Harrisburg, Pa.

Philadelphia

Dr. Wise Named Department Head.—Dr. Robert I. Wise has been appointed Magee Professor of Medicine and head of the department at Jefferson Medical College, succeeding Dr. William A. Sodeman, who became dean April 22, 1958. Dr. Wise received his Ph.D. in bacteriology from the University of Illinois and his M.D. from the University of Texas Medical Branch. He came to Jefferson as assistant professor in medicine in September, 1955.

Symposium on Health and Social Delinquency.—The College of Physicians of Philadelphia, Section of Public Health, Preventive and Industrial Medicine, has announced that a Symposium on "Health Problems and Social Delinquency" will be held Feb. 17, 4:30-6:00 p. m., at the College Hall, 19 S. 22nd St. The guest speaker will be Mayor Richardson Dilworth. Moderator will be Dr. William A. Steiger, associate professor of medicine, Temple University School of Medicine and Hospital, and the panelists will include Dr. Maurice E. Linden, director, Division of Mental Health, Philadelphia Department of Public Health; Rev. W. Carter Merbreier, Pastor, St. Matthew's Lutheran Church, Philadelphia; and Mr. Randolph E. Wise, commissioner of public welfare, City of Philadelphia. Dr. John J. Hanlon is chairman of the symposium.

Grants for Research in Surgery.—Surgical research grants totaling $603,551 have been made to Hahnemann Medical College and Hospital through Dr. John M. Howard, professor of surgery, from Institutes of the U. S. Public Health Service and the Department of the Army. Dr. Howard noted that additional surgical laboratories are already being

built at Hahnemann and that the grants will provide for more surgical investigators and technicians as well as new equipment. Three five-year grants came from the Institute of Arthritis and Metabolic Diseases for the studies of inflammation of the pancreas, the National Heart Institute for research in the field of vascular surgery, and the National Cancer Institute for studies of the transplantation of cancer. One three-year grant came from the Department of the Army for studies of the treatment of irradiation and other injuries related to atomic casualties.

TEXAS

Symposium on Cancer Research.—"Genetics and Neoplastic Growth" will be the topic for the 13th annual Symposium on Fundamental Cancer Research, to be held Feb. 26-28 at the University of Texas M.D. Anderson Hospital and Tumor Institute, Houston. General Chairman Felix L. Haas has announced that five sessions have been arranged and session chairman named:

Fundamental Aspects of Genetics in Carcinogenesis (I), Wilson S. Stone, Ph.D., The University of Texas, Austin.
Fundamental Aspects of Genetics in Carcinogenesis (II), M. Demerec, Ph.D., Carnegie Institution, Cold Spring Harbor, N. Y.
Gene Interaction in Neoplastic Growth, Theophilus S. Painter, Sc.D., The University of Texas, Austin.
Genetic Basis of Cell Resistance, Walter E. Heston, Ph.D., National Cancer Institute, U. S. Public Health Service, Bethesda, Md.
Heredity and Human Cancer, James F. Crow, Ph.D., University of Wisconsin, Madison.

For information write the General Chairman: Felix L. Haas, Department of Biology, M.D. Anderson Hospital, Houston 25, Texas.

VERMONT

Establish Department of Preventive Medicine.—At the December meeting of the University of Vermont's Board of Trustees a department of preventive medicine was established at the College of Medicine, Burlington. Dr. Leon R. Lezer was appointed acting chairman. Previously preventive medicine has been a division under the department of bacteriology.

Personal.—Dr. Albert G. Mackay, chairman, department of surgery, University of Vermont College of Medicine, Burlington, has been appointed to the Committee on Continuation Education of the Association of American Medical Colleges.——Dr. Robert J. McKay Jr., chairman of the department of pediatrics, University of Vermont College of Medicine, Burlington, has been appointed to the Committee on Internships, Residencies and Graduate Medical Education of the Association of American Medical Colleges.

GENERAL

Change Dates of Health Education Conference.—Dr. Iago Galdston, secretary of the New York Academy of Medicine, has announced that the dates for the forthcoming Eastern States Health Education Conference have been changed. The conference will be held on Thursday and Friday, April 30 and May 1, at the New York Academy of Medicine, 2 E. 103 St., New York City. (The previous dates were April 23-24.)

Tenth Interstate Meeting.—The first decade of a pioneer and successful experiment in interstate medical cooperation will be marked when the Vermont and New Hampshire medical societies hold a joint medical convention at the Equinox House, Manchester, Vt., Oct. 1-4. Begun in 1950, the joint session idea has been reported successful by the states presidents, Drs. Wayne Griffith, of Chester, Vt., and Clinton R. Mullins, of Concord, N. H. Dr. W. Philip Giddings, of Bennington, Vt., is chairman of the combined program committee. The New Hampshire Medical Society was founded in 1791; the Vermont society began in 1813.

Allergists Meeting in Chicago.—The 15th annual meeting of the American Academy of Allergy will be held Feb. 9-11 at the Morrison Hotel, Chicago. Thirty-three scientific papers will be presented. A postgraduate course will be conducted on Feb. 7-8. The scientific program will include addresses by the following: Drs. Fred G. Germuth Jr., Charlotte, N. C.; Barton Childs, Baltimore; I. Gardner, New York; Rachmiel Levine, Chicago; and Francis L. Lederer, Chicago. The annual business meeting and election of officers will be held at 4 p. m., Feb. 10. Displays of nine scientific experiments on recent research programs by physicians in allergy and 49 exhibits are planned. Dr. Leon Unger, associate professor of medicine, Northwestern University Medical School, Chicago, is chairman of the Committee on Local Arrangements.

Neuropsychiatric Center in Brooklyn.—The Veterans Administration has established its first Neuropsychiatric Day Center at the Outpatient Clinic, Brooklyn, as an integral part of the existing Mental Hygiene Clinic. The Day Center is open daily, and selected psychiatric patients spend the major portion of each day receiving psychotherapy within the framework of social, educational, diversional, occupational, and manual arts activities. This new approach to treatment reportedly provides a needed transition between the hospital and the community. It also greatly broadens the scope of services rendered in the Mental Hygiene Clinic. The center staffed by a team of psychiatrists, psychologists, cial workers, and other specialized personnel. Inquiries may be addressed to Dr. Philip R. Casesa, director of clinic, 35 Ryerson St., Brooklyn.

Symposium on Study of Venereal Diseases.—The 10th annual Symposium on Recent Advances in the Study of Venereal Diseases will be held April 27-28 at Johns Hopkins University, Baltimore. The sessions are open to all physicians and workers in allied fields interested in the venereal diseases. This symposium, sponsored jointly by the American Venereal Disease Association and the U. S. Public Health Service, will precede a Venereal Disease Seminar for public health personnel of 14 eastern states, beginning April 29. Anyone wishing to present a scientific paper on a subject related to venereal disease should mail preliminary abstracts to Dr. William J. Brown, chairman of the program committee, by Feb. 15. His address is Communicable Disease Center, Public Health Service, 50 Seventh St., N. E., Atlanta 23, Ga. The committee will meet in mid-February to select papers to be presented. Authors of accepted papers will be notified before March 15.

Essay Contest for Physician-Writers.—The 1959 competition in the Mississippi Valley Medical Society Annual Essay Contest has been announced. Any subject of general medical or surgical interest including medical economics and education may be submitted, providing the paper is unpublished and is of interest and applicable value to general practitioners of medicine. Contributions are accepted only from physicians who are members of the A. M. A. and who are residents and citizens of the United States. Manuscripts, not to exceed 5,000 words, must be submitted in five complete copies, in manuscript style. The winning essay receives a cash prize of $100, a gold medal, and a certificate, also an invitation to address the annual meeting of the Mississippi Valley Medical Society, Sept. 30-Oct. 2. The society may also award certificates of merit to physicians whose essays rate second and third best. Essays must be in the office of the society secretary not later than May 1. Winning essays are published each year in the January *Mississippi Valley Medical Journal* (Quincy, Ill.). For information write Dr. Harold Swanberg, Secretary, Mississippi Valley Medical Society, 209-224 W.C.U. Building, Quincy, Illinois.

Homicide Rate Decreases.—In contrast to the marked increase in major crimes, the incidence of homicide in the United States has decreased in the period since World War II, according to statisticians of the Metropolitan Life Insurance Company. The age-adjusted homicide rate fell about 20% between 1946-47 and 1955-56, from 6.1 to 4.8 per 100,000 of population. The relative decline was greater for white than for nonwhite persons, and for each race was much greater for males than for females. Among white males, the decrease amounted to 25%; among nonwhite males it was 20%. Among white persons the homicide rates vary but little in the range of ages from early adult life through middle age, and decrease only moderately at the older ages. Among nonwhites, and particularly for males, the toll from homicide rises to a definite peak in the late 20's and early 30's, and then falls rapidly with advance in age. Despite the increase in juvenile delinquency in recent years, the homicide rate at ages 15 to 19 decreased. Moreover, the rate at these ages is much lower than that for most adult age groups.

Meeting on Ski Injuries.—"Doctors and Skis" is the title of a meeting on skis and ski injuries to be held at the Wendell–Sherwood Hotel, Pittsfield, Mass., Feb. 19-20. Over 15 papers are scheduled for presentation. Dr. E. J. Coughlin Jr., Williamstown, Mass., chairman, Regional Committee on Trauma, American College of Surgeons, will open the meeting. Dr. Barbara Stimson, Poughkeepsie, N. Y., chairman of the Mid-Hudson Trauma Committee of the college, will present "Fractures of the Tibia." A symposium on "'One of a Kind' Injuries" is planned for the morning of Feb. 20, with a panel discussion on the prevention of Ski Injuries to be held that afternoon. The guest speaker at the banquet Feb. 19, 6:30 p. m., will be Dr. Hans Kraus, New York City, chairman, Medical Advisory Committee, Eastern Division, National Ski Patrol, who will speak on "Preconditioning and Rehabilitation of Ski Injuries." For information write Dr. Edward J. Coughlin Jr., c/o Berkshire Hills Conference, 50 South St., Pittsfield, Mass.

Northwest Physicians Meeting in Vancouver.—The Pacific Northwest Regional Meeting of the American College of Physicians for Oregon, Washington, and British Columbia will be held Feb. 14 at St. Paul's Hospital Auditorium, Vancouver, B. C. Papers which include invited authors are:

Respiratory Function: Clinical Aspects, Dr. Harold V. Rice, Vancouver, B. C.

Experience with Glipasol, a New Oral Hypoglycaemic Drug, Drs. T. W. Davis, R. B. Kerr, and A. Bogoch, Vancouver, B. C.

A Study in Calcium Infusion in Normal Subjects and in Patients with Paget's Disease, Drs. G. D. McPherson, D. H. Copp, H. W. McIntosh, and T. C. Johnson, Vancouver, B. C.

At the evening session the speakers will be Dr. Howard P. Lewis, president-elect of the college and Harry V. Warren, professor of mineralogy, department of geology and geography, University of British Columbia. Dr. Warren will speak on "Geology and Health." For information write Dr. George A. Davidson, 3195 Granville St., Vancouver 9, B. C., Canada.

Scholarships for Mexican Physicians.—The American Rhinologic Society has announced that it provided full scholarships to five Mexican physicians and half scholarships to six to enable them to attend a course

in reconstructive nasal surgery presented at the White Memorial Hospital, Los Angeles, Jan. 9-16. Sponsored jointly by the departments of otolaryngology of the College of Medical Evangelists and University of Southern California School of Medicine, Los Angeles, with the cooperation of the American Rhinologic Society, the course was on "Reconstructive Surgery of the External Nasal Pyramid and Nasal Septum," under the direction of Dr. Maurice H. Cottle, professor of otolaryngology, Chicago Medical School. Dr. Amos E. Friend, of Manchester, Conn., chairman of the society's Public Relations Committee, said the scholarships were designed to further cement international relations as well as to spread surgical knowledge. At the request of a group of Mexican otolaryngologists, the American Rhinologic Society sent two of its members, Drs. Robert M. Hansen, of Portland, Ore., and George H. Drumheller, of Everett, Wash., to present a five-day course at the University of Michoccan Medical School, Nov. 10-15, 1958.

Open Competition for Lipreading Scholarship.—Competition for the 1959 Kenfield Memorial Scholarship, awarded annually by the American Hearing Society to a prospective teacher of lipreading, will open Feb. 1. Application blanks, obtained by writing to Miss Ruth Bartlett, chairman of the society's teachers committee, 432 S. Curson Ave., E., Los Angeles 36, must reach Miss Bartlett by April 1. Winner of the scholarship will be entitled to take a course in "Methods and Practice in Teaching Lipreading" from any school or university in the U. S. offering a course acceptable to the committee. The scholarship must be used within one year. A satisfactory applicant shall be a "well-adjusted individual with a pleasing personality, legible lips, good speech and voice, and no unpleasant mannerisms." Graduation from college, with a major in education, psychology, and/or speech, is a requirement. If the applicant is hard of hearing, he must have had 30 clock hours of private instruction under an approved teacher of lipreading, or 60 clock hours of lessons in public school classes under a qualified lipreading teacher. Funds establishing the scholarship were subscribed in 1937 in memory of the late Miss Coralie N. Kenfield, San Francisco, known for her effective methods of teaching lipreading. In 1958 the Kenfield award was won by Mr. Stuart Edmonds, Midland, Mich.

Award for Contributions to Therapy.—Each year the American Therapeutic Society presents the Oscar B. Hunter Memorial award in honor of its late secretary, Dr. Oscar B. Hunter. The award is made in recognition of an outstanding contribution or series of contributions to therapy by an individual or team of workers. One object in making the award is to bring recognition to those who have not received distinguished awards for their work. The term "therapy" is used to include the use of drugs, procedure, or device of benefit in the treatment of patients. The award consists of a bronze medal mounted on a plaque, struck in the likeness of Dr. Hunter and engraved with the name of the recipient. The winner will be expected to present a paper at the time of the presentation of the award, covering the work forming the basis of the award. Travel expenses to the meeting will be furnished. The deadline for receiving nominations for the 1959 award is March 1. Previous recipients are Dr. Jonas E. Salk (1955), Dr. Eugene M. K. Geiling (1956), Dr. Robert W. Wilkins (1957), and Dr. C. Walton Lillehei (1958). Nominations may be made by sending a letter, including reasons for the nomination, to Dr. Harry E. Ungerleider, 393 Seventh Ave., New York 1. The curriculum vitae of the candidate and a list of his publications should also be included.

New Journal of Neurology.—Academic Press Inc., publishers, have completed plans for a new journal, *Experimental Neurology*, for which William F. Windle, Ph.D., chief of the laboratory of neuroanatomical sciences, National Institutes of Health, Bethesda, Md., will be editor. He will be assisted by six associate editors, Drs. Sam L. Clark, Edward W. Dempsey, Ph.D., Louis B. Flexner, Seymour S. Kety, Horace W. Magoun, Ph. D., Roger J. Rossiter, and an international editorial board. The periodical will publish results of original research by experimental methods, and it will stress particularly the basic neurological sciences. Neurophysiology, pharmacology, chemistry, and experimental neuroanatomy, embryology, pathology are the disciplines to be considered. Physiological psychology and the clinical sciences will not be excluded, nor will a limit be placed on the range of species constituting subjects of experiments. The initial number of *Experimental Neurology* will be published early in 1959, and the remaining issues will appear at bimonthly intervals. Manuscripts in the English language and editorial queries may be submitted to the Editorial Office, Room 3D-14, Building 10, Laboratory of Neuroanatomical Sciences, National Institutes of Health, Bethesda 14, Md. Subscription information is available from the Publishers, Academic Press Inc., 111 Fifth Ave., New York 3.

Society News.—Officers recently elected by the **Central Society for Clinical Research** are as follows: Dr. Edgar S. Gordon, Madison, Wis., president; Dr. John H. Dingle, Cleveland, vice-president; and Dr. Austin S. Weisberger, Cleveland, secretary-treasurer. The next annual meeting will be held Nov. 6-7, 1959, at the Drake Hotel, Chicago.—The **Gerontological Society, Inc.,** has elected the following officers: president, Mr. Louis Kuplan, Sacramento, Calif.; president-elect, Nathan W.

Shock, Ph.D., Baltimore; secretary, Robert W. Kleemeier, Ph.D., St. Louis; and treasurer, Dr. John E. Kirk, St. Louis. The next meeting will be held at the Statler Hotel, Detroit, Nov. 12-14, 1959.—The officers of the **American Roentgen Ray Society** for 1958-1959 are: president, Dr. Barton R. Young, Philadelphia; president-elect, Dr. Edward B. D. Neuhauser, Boston; first vice-president, Dr. Franklin B. Bogart, Chattanooga, Tenn.; second vice-president, Dr. Bradley A. Soule Jr., Burlington, Vt.; secretary, Dr. C. Allen Good, Rochester, Minn.; and treasurer, Dr. Robert K. Arbuckle, Oakland, Calif.—The **Southern Medical Association** has elected the following officers: Dr. Milford O. Rouse, Dallas, Texas, president; Dr. Edwin Hugh Lawson, New Orleans, president-elect; Dr. Tom D. Spies, Birmingham, Ala., first vice-president; and Dr. Edwin L. Zander, New Orleans, second vice-president.—The following are the officers of the **American Academy of Dermatology and Syphilology** for the year 1959: Drs. Anthony C. Cipollaro, president; Norman M. Wrong, vice-president; Robert R. Kierland, secretary-treasurer; Stanley E. Huff, assistant secretary-treasurer; and Samuel J. Zakon, historian.—National headquarters of the **American Hearing Society** were moved to 919 18th St., N. W., Washington 6, D. C., during the Christmas holidays. The agency occupies first floor space in an eight-story building which is being remodeled and converted from apartments to offices.

Symposium on Germfree Research.—A national symposium on the technology of germfree research will be held April 8-9 at Lobund Institute, University of Notre Dame, South Bend, Ind. Sponsoring institutions, in addition to Lobund Institute, are the Office of Naval Research, the Institute of Laboratory Animal Resources (National Academy of Sciences–National Research Council), and the Public Health Service's National Institutes of Health. The design, construction, and maintenance of germfree equipment as well as knowledge or workable techniques for rearing animals in a germfree environment are the aims of the forthcoming symposium, which also covers the broad field of gnotobiotics, a term used to describe the science of rearing laboratory animals whose flora and fauna are specifically known. The first symposium on gnotobiotics was held in 1939 at Lobund Institute, formerly known as the laboratory of bacteriology of the University of Notre Dame. Papers at the 1959 symposium will be presented on microbiological control procedures, methods of diet sterilization, and techniques for rearing animals in a germfree environment. Time will be allowed for round-table discussion. Registration begins at 8:00 a. m., April 8, and the first session is at 10:00 a. m. Information is available from the chairman of the symposium, Prof. Philip C. Trezler, Lobund Institute, University of Notre Dame, South Bend, Ind., and Donald L. Snow, Chief, Sanitary Engineering Branch, Division of Research Services, National Institutes of Health, Bethesda, Md.

Symposium on Instrumental Analysis.—The Instrument Society of America has announced its 1959 fifth annual Symposium on Instrumental Methods of Analysis, programed by the Analysis Instrumentation Division, will be held at the Shamrock–Hilton Hotel, Houston, Texas, May 18-20, 1959. Dr. J. D. Lindsay, head of Texas A&M's chemical engineering department, will keynote the symposium theme, "New Techniques in Analytical Instrumentation for Laboratories and for Processing Plants." Program topics include:

May 18—Economics of Instrumental Analysis; Electrochemical Methods of Analysis; New Approaches to Instrumental Analysis; Advances in Chromatography Theory.
May 19—Instrumentation for Chemical Methods of Analysis; Instrumentation for Optical Methods of Analysis; Instrumentation for Physical Methods of Analysis; New Design Techniques in Process Analysis Instrumentation; Unique Laboratory Instruments for Analysis Instrumentation.
May 20—Process Chromatography; Radiation in Analysis Instrumentation; X-Ray and Microwave Spectroscopy.

All contributors desiring to present papers at this meeting should send title, authors, and three copies of a 100-word abstract to M. D. Weiss, Program Chairman, Special Instrumentation Division, Union Carbide Olefins Company, South Charleston, W. Va. Final deadline for submission of "Intent to Present a Paper" is Feb. 15, 1959. However, the program will be closed as soon as enough papers are received to complete each session.

Grants for Nutrition Research.—The Nutrition Foundation recently assigned $128,000 for grants-in-aid and educational projects to 12 universities and medical schools in the United States, Canada, and Central America, it was announced by Charles G. King, Sc.D., executive director of the foundation. Since its founding 17 years ago, the foundation has allocated 302 grants-in-aid totaling over $5,200,000 to support research by medical and nutritional scientists. The new grants will permit these noted research scientists to extend present investigations or launch new studies in the area of nutritional science. In addition, Dr. King reported that almost one million dollars in supplementary funds have been donated by member and nonmember companies to support the foundation's intensified program to determine the relationship of edible oils and fats to overweight and to possible changes in blood cholesterol. One grant was made to Dr. Nevin S. Scrimshaw, of the Institute of Nutrition of Central America and Panama, for intensive research into the significance of diets low in animal protein, fats and other nutrients. The largest grant ($23,000 over a two-year period) was assigned to the University

of Notre Dame, where Dr. Bernard S. Wostmann will be able to continue his pioneering work in determining the nutrient requirements of germ-free animals. The Nutrition Foundation is a nonprofit research organization, industry-financed, and operated in the public interest. Supporting basic research and education in the science of nutrition, the foundation during the past year has distributed more than a million dollars in grants to medical and graduate schools in the United States, Canada, and Central America.

FOREIGN

Congress of Allergy in London.—The Fourth European Congress of Allergy will be held in London Sept. 2-4 under the presidency of Prof. R. J. S. McDowall. Honorary president of the congress is Sir Henry Dale. The main subjects will be as follows:

Nature and chemistry of allergens and their antibodies.
The mechanism of allergic reactions.
Aerobiology in relation to allergy in Europe (with special reference to mould spores).
Allergic reactions to drugs administered systemically or topically.
The long-term therapy of asthma with hormones.
Significance of psychological factors in asthma.

The official languages will be French, German, and English, and a translation service will be organized. A second theatre will be available for free subjects. Demonstrations and a program of entertainments will be organized. For information write the General Secretary, Dr. A. W. Frankland, St. Mary's Hospital, London, England.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

National Board of Medical Examiners: Part II only, April 21-22; Parts I and II, June 16-17; Part I only, Sept. 9-10. Examinations must be received at least six weeks in advance of a specific examination date. Examining centers established after close of registration. Exec. Sec., Dr. John P. Hubbard, 133 South 36th St., Philadelphia 4.

EDUCATIONAL COUNCIL FOR FOREIGN MEDICAL GRADUATES, INC.

Educational Council for Foreign Medical Graduates, Inc: Stations around the world, Feb. 17. Deadline for foreign applications was Nov. 17. The following examination will be held Sept. 22 with application deadline of June 22. Exec. Director, Dr. Dean F. Smiley, 1710 Orrington Ave., Evanston, Ill.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Written.* Montgomery, June 16-18. Sec., Dr. D. G. Gill, State Office Bldg., Montgomery 4.

ALASKA:* On application in Anchorage and Juneau. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

ARKANSAS:* *Examination and Reciprocity.* Little Rock, June 11-12. Sec., Dr. Joe Verser, Harrisburg.

CONNECTICUT:* *Regular. Examination.* Hartford, March 10-12. Acting Sec., Dr. Louis P. Hastings, 160 St. Ronan St., New Haven.

FLORIDA:* *Examination.* Miami Beach, June 22-24. Sec., Dr. Homer L. Pearson, 901 N.W. 17th St., Miami 36.

GEORGIA: *Examination and Reciprocity.* Atlanta, June. Sec., Mr. C. L. Clifton, 224 State Capitol, Atlanta 3.

GUAM: *Subject to Call.* Act. Sec., Dr. F. L. Conklin, Agana.

MAINE: *Examination.* Portland, March 10-12. *Endorsement.* Portland, March 10. Sec., Dr. Adam P. Leighton, 142 High St., Portland.

MICHIGAN:* *Examination.* Ann Arbor and Detroit, June 8-10. Sec., Dr. E. C. Swanson, 118 Stevens T. Mason Bldg., West Michigan Ave., Lansing 8.

MINNESOTA:* *Reciprocity.* St. Paul, February. Sec., Dr. F. H. Magney, 230 Lowry Medical Arts Bldg., St. Paul.

MONTANA: *Examination and Reciprocity.* Helena, April 7. Sec., Dr. Thomas L. Hawkins, 555 Fuller Ave., Helena.

NEBRASKA:* *Examination.* Omaha, June. Director, Mr. Husted K. Watson, Room 1009, State Capitol Bldg., Lincoln 9.

NEW HAMPSHIRE: *Examination and Endorsement.* Concord, Mar. 11-14. Sec., Dr. Edw. W. Colby, 61 So. State St., Concord.

NEW MEXICO:* *Examination and Reciprocity.* Sante Fe, May 18-19. Sec., Dr. R. C. Derbyshire, 227 East Palace Ave., Santa Fe.

NORTH CAROLINA: *Examination.* June Asst. Sec., Mrs. Louise J. McNeill, 716 Professional Bldg., Raleigh.

OKLAHOMA:* *Examination.* Oklahoma City, June 2-3. Exec. Sec., Mrs. E. L. Haidek, 813 Braniff Bldg., Oklahoma City.

PUERTO RICO: *Examination and Reciprocity.* San Juan, March 3. Acting Secretary, Dr. Herminio Mendez Herrera, Box 9156, Santurce.

SOUTH CAROLINA: *Reciprocity.* Columbia, May 12; *Examination.* Columbia, June 23-24. Sec., Dr. H. E. Jervey, Jr., 1829 Blanding St., Columbia.

TEXAS:* *Examination and Reciprocity.* Fort Worth, June 22-24. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

UTAH: *Examination.* Salt Lake City, July 8-10. Dir., Mr. Frank E. Lees, 324 State Capitol Bldg., Salt Lake City 1.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARKANSAS: *Examination.* Little Rock, May 4-5. Sec., Dr. S. C. Dellinger, University of Arkansas, Fayetteville.

CONNECTICUT: *Examination.* New Haven, Feb. 14. Exec. Asst., Mrs. Regina G. Brown, 258 Bradley St., New Haven 10.

FLORIDA: *Examination.* Miami, June 6. Sec., Mr. M. W. Emmel, University of Florida, Box 340, Gainesville.

KANSAS: *Examination.* Kansas City, June. Sec., Dr. L. C. Heckert, Pittsburg.

MICHIGAN: *Examination.* Ann Arbor and Detroit, Feb. 12-13. Sec., Mrs. Anne Baker, 116 Stevens T. Mason Bldg., West Michigan Ave., Lansing.

OKLAHOMA: *Examination.* Oklahoma City, Mar. 27-28. Exec. Sec., Mrs. L. Haidek, 813 Braniff Bldg., Oklahoma City.

RHODE ISLAND: *Examination.* Providence, Feb. 18. Administrator of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

TEXAS: *Examination.* April 1959. Certificates issued by reciprocity and waiver on the first and fifteenth of each month. Sec., Bro. Raphael Wilson, 407 Perry-Brooks Bldg., Austin.

WISCONSIN: *Examination.* Madison, April 4. Final date for filing application is March 27. Milwaukee, June 6. Final date for final application is May 29. Sec., Mr. W. H. Barber, 621 Ransom St., Ripon.

*Basic Science Certificate required.

GOVERNMENT SERVICES

ATOMIC ENERGY COMMISSION

Brookhaven Medical Research Center.—The nation's newest atomic medical research center, including the world's first nuclear reactor designed specifically for medical use, was dedicated at Brookhaven National Laboratory, Upton, L. I., New York. In addition to the reactor, the new Brookhaven Medical Research Center includes a 48-bed hospital for research patients and laboratories for studies on medical applications of atomic energy. The medical research reactor, which is scheduled for operation early in 1959, includes unique design features for use in research treatment of ailing human beings and experimental animals.

AIR FORCE

School of Aviation Medicine.—On Feb. 9, 1959, the School of Aviation Medicine, Randolph Air Force Base, Texas, will commemorate the tenth anniversary of the founding of the department of space medicine. Major Gen. Harry G. Armstrong, former commandant of the school and a pioneer in aeromedical research, established the department, the first of its kind in the world. This school was the first to initiate a professorship of space medicine, presently held by Dr. Hubertus Strughold. To mark this important date, Major Gen. Otis O. Benson Jr., the present commandant, requested the original members of the department (which has since been expanded into a full division) to be on hand. With General Armstrong will be Drs. Strughold, Fritz Haber, Heinz Haber, and Konrad J. K. Buettner. After a tour of space medicine and space biological facilities at the school, General Benson will introduce the program. General Armstrong will then describe the organization of the department of space medicine; and Col. Paul A. Campbell, chief of the space medicine division, will discuss the present organization of the division and the general aspects of the space medical and space biological effort at the school. After this presentation, each of the four civilian scientists of the initial organization will discuss, in light of his own specialty, problems and predictions for space medicine and space flight of the next decade. To close the day, a banquet will be held at which the guest speaker will be Lieut. Gen. Roscoe C. Wilson, deputy chief of staff for development, Headquarters U. S. A. F., Washington, D. C.

ARMY

Medical Packet for Care of Mass Casualties.—An emergency medical packet for use in a mass casualty situation has been designed. Mass casualty situations occur whenever the number of persons injured is out of proportion to the medical resources available. The problems of mass casualty care are thus not confined to nuclear warfare but can result from fires, floods, hurricanes, and other civil disasters. The new packet, containing 23 items, will provide enough medical material to treat about 100 casualties for about 72 hours. It is, however, designed for much more than first aid. It has nine component cartons: two master packs containing a plasma substitute (Dextran) and miscellaneous items, one fracture pack, two burn packs, and four wound packs.

VETERANS ADMINISTRATION

Personal.—Dr. Robert J. Scott, director of professional services at the Veterans Administration Hospital at Richmond, Va., has been appointed manager of the VA hospital in Fort Wayne, Ind. Dr. Scott will succeed Dr. Michael H. Travers, who was recently appointed director of domiciliary homes for the VA in Washington, D. C.

FOOD AND DRUG ADMINISTRATION

Court Actions During November.—Contaminated foods seized during November totaled 244 tons. A major part of this volume was contaminated in warehouse storage. This included 12 tons of shelled walnuts, 6 tons of ginger root, 37 tons of flour, and 16 tons of raw popcorn. An additional 11 tons of foods, including vanilla beans without flavoring strength, watered-down orange juice, and substandard canned green beans, were seized as economic cheats. Of 25 drugs and devices seized in November, 13 were alleged to be misbranded by false and misleading claims. Five were vibrator-massage devices for which weight reduction claims were made. Altogether, 73 seizure cases were instituted.

Voluntary Corrective Actions.—During November, food firms voluntarily destroyed or converted to animal feed or nonfood use more than 291 tons of unfit foods; 116 tons of wheat on a barge were contaminated with oil. More than 50 tons of frozen foods were destroyed after spoilage because of a power failure in a cold storage warehouse. Food manufacturers spent an estimated $595,387 in plant improvements to make sure of producing clean, wholesome products, as required by law.

DEATHS

Aleman, Ruth Gertrude Ⓜ New Orleans; born in Belle Alliance, La., Sept. 12, 1892; Medical College of Virginia, Richmond, 1924; served as a nurse in France with the American Expeditionary Forces during World War I; past-president of the New Orleans Catholic Physicians Guild and the Louisiana State Pediatric Society; once president of the Alpha Epsilon Iota, woman's medical fraternity; served as secretary of the New Orleans branch of the American Medical Women's Association; member of the American Academy of Pediatrics; for many years taught pediatrics at the Hotel Dieu School of Nursing; at one time served as clinical instructor in pediatrics at the Tulane University Graduate School of Medicine; served as instructor in pediatrics at the Louisiana State University School of Medicine; past-president of the medical staff, Hotel Dieu. Sisters' Hospital; for many years associated with the Charity Hospital, Mercy Hospital, and the St. Vincent's Infant Asylum, where in 1939 she was named medical director; in 1945 commissioned a senior surgeon in the U. S. Public Health Service Reserve; died Nov. 18, aged 66.

Birkenstock, Carl Frederick Ⓜ San Diego, Calif.; College of Medical Evangelists, Loma Linda and Los Angeles, 1923; L. R. C. P., of Edinburgh, L. R. C. S., Edinburgh, and L. R. F. P. & S., Glasgow, 1923; member of the International College of Surgeons and the American Academy of General Practice; formerly a medical missionary in South Africa; certified by the National Board of Medical Examiners; served on the staff of the Paradise Valley Hospital in National City, where he was once chief of staff; died in the Sharp Memorial Hospital Nov. 9, aged 61.

Bishop, Elizabeth Ellen, Pendleton, Ore.; University of Oregon Medical School, Portland, 1937; specialist certified by the American Board of Preventive Medicine; past-president of the Oregon Public Health Association; formerly health officer of Union and Baker counties; at one time associated with the Alaska Department of Health in Juneau; died Nov. 6, aged 46.

Botkin, Amos Watts, Oregon City, Ore.; Willamette University Medical Department, Salem, 1890; Jefferson Medical College of Philadelphia, 1893; veteran of World War I, formerly practiced in Gresham, where he was active in civic affairs and for 12 years was a city councilman and a member of the school board; died in the Veterans Administration Hospital, Portland, Nov. 25, aged 94.

Ⓜ Indicates Member of the American Medical Association.

Broach, Norman Leslie, Pine Level, Ala.; Atlanta School of Medicine, 1909; member of the Medical Association of the State of Alabama; associated with the St. Margaret's Hospital, Montgomery, where he died Nov. 18, aged 77.

Burkle, George Henry Jr. Ⓜ Memphis, Tenn.; University of Tennessee College of Medicine, Memphis, 1930; formerly on the faculty of his alma mater; member of the Southeastern Surgical Congress; fellow of the American College of Surgeons; for many years on the staff of St. Joseph Hospital; on the courtesy staffs of the Methodist Hospital, Baptist Hospital, and City of Memphis Hospitals; died Nov. 18, aged 54.

Buschle, Donald Francis Ⓜ Syracuse, N. Y.; Syracuse University College of Medicine, 1949; clinical assistant professor of anesthesiology at his alma mater, now known as the State University of New York College of Medicine; certified by the National Board of Medical Examiners; specialist certified by the American Board of Anesthesiology; member of the American Society of Anesthesiologists; on the staff of St. Joseph's Hospital, where he died Nov. 14, aged 32.

Byas, John Vick, Memphis, Tenn.; Meharry Medical College, Nashville, Tenn., 1909; died Nov. 5, aged 78.

Casagrande, Annibale, New York City; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1923; associated with the Manhattan General Hospital and the Beekman–Downtown Hospital; died in the Medical Arts Center Hospital Nov. 11, aged 58.

Clarke, Eric Kent Ⓜ Lynn Haven, Fla.; born in Portsmouth, Ont., Canada, May 28, 1894; University of Toronto Faculty of Medicine, Toronto, Ontario, Canada, 1916; served on the faculty of his alma mater, University of Rochester (N. Y.) School of Medicine, University of Minnesota Medical School in Minneapolis, and the University of Minnesota Graduate School, Minneapolis–Rochester; a captain in the Canadian Medical Corps during World War I; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychiatric Association and the Ohio State Medical Association; formerly psychiatrist for the bureau of health and board of education in Rochester, N. Y., where he was at one time associated with the Strong Memorial Hospital; from 1954 to 1956 medical director of the Erie County

Guidance Center in Sandusky, Ohio; author of "Mental Hygiene for Community Nursing"; died in Panama City, Nov. 19, aged 64.

Clemens, Harry Herschel Ⓜ Pasadena, Calif.; born in Toronto, Ont., Canada, July 22, 1910; University of Louisville School of Medicine, Louisville, Ky., 1937; specialist certified by the American Board of Pediatrics, Inc.; member of the American Academy of Pediatrics; instructor in pediatrics at the University of Southern California School of Medicine in Los Angeles; served an internship at the Louisville City Hospital in Louisville, Ky., where he served a residency in bacteriology; formerly a resident at the Grady Hospital in Atlanta, Ga., Willard Parker Hospital in New York City, and the Rawlings Sanitarium in Sandersville, Ga.; associated with the Los Angeles County Hospital in Los Angeles, Collis P. and Howard Huntington Memorial Hospital, and St. Luke Hospital, where he died Aug. 14, aged 48.

Conklin, James Edward Jr. Ⓜ Sacramento, Calif.; University of Southern California School of Medicine, Los Angeles, 1939; member of the American Academy of General Practice; veteran of World War II; on the staffs of the Mercy and Sutter hospitals; died Nov. 27, aged 48.

Davis, Luther, Tucson, Ariz.; University of Tennessee College of Medicine, Memphis, 1912; died in St. Mary's Hospital Nov. 13, aged 73.

De Rouen, Robert Francis, New Iberia, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1908; past-president and vice-president of the Louisiana Coroners' Association; for many years coroner of Iberia Parish; served as state representative; died Nov. 8, aged 91.

Edmond, Courtney Ⓜ Clifton Forge, Va.; University College of Medicine, Richmond, 1903; fellow of the American College of Surgeons; served as vice-president of the Virginia Society of Otolaryngology and Ophthalmology; served on the city council; associated with the Chesapeake and Ohio Hospital; died Nov. 2, aged 82.

Edyvean, William Henry, Deadwood, S. D.; Université de Lausanne Faculté de Médecine, Switzerland, 1955; veteran of World War II; interned at Weld County General Hospital in Greeley, Colo.; died Nov. 13, aged 51.

Feith, Victor, New York City; Julius-Maximilians-Universität Medizinische Fakultät, Würzburg, Bavaria, Germany, 1912; member of the Medical Society of the State of New York; died in the North Shore Hospital Oct. 5, aged 71.

Gandy, Charles Lewis Ⓜ Colonel, U. S. Army, retired, Mesilla Park, N. M.; born in Fort Concho, Texas, Jan. 24, 1889; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1912; honorary graduate and medalist, Army Medical School in 1914, when he entered the regular Army; rose through the various grades to that of colonel in 1940; served in the occupation of Germany during World War I, and the occupation of Japan in World War II; served two overseas tours in the Philippine Islands; retired Jan. 31, 1949; college physician, New Mexico College of Agriculture and Mechanical Arts, State College; fellow of the American College of Surgeons; died Nov. 12, aged 69.

Gilbert, Joseph Le Roy Ⓜ Washington, D. C.; born in Bellefourche, S. D., Aug. 9, 1890; Creighton University School of Medicine, Omaha, 1919; specialist certified by the American Board of Psychiatry and Neurology; fellow of the American College of Physicians; past-president of the Washington Society of Nervous and Mental Diseases; member of the American Psychiatric Association and the Washington Psychiatric Society; served on the faculty of the Washington School of Psychiatry, as chief psychiatrist at the Gallinger Municipal Hospital, now known as the District of Columbia General Hospital, and as alienist for the District of Columbia; served as chief of service, Department of Health, Education and Welfare; member and trustee, William Alanson White Foundation; chief of service, St. Elizabeth's hospital, where he died suddenly at his desk Nov. 13, aged 68.

Golden, Thomas Kernan Ⓜ Youngstown, Ohio; Georgetown University School of Medicine, Washington, D. C., 1928; fellow of the American College of Surgeons; on the staffs of the Central Clinic and Hospital and Salem City Hospital in Salem, Mahoning Tuberculosis Sanatorium, and St. Elizabeth Hospital, where he died Nov. 19, aged 54.

Graves, James Quintus Ⓜ Monroe, La.; born in Columbia, March 17, 1878; Medical Department of Tulane University of Louisiana, New Orleans, 1906; past-president of the Fifth District Medical Society and the Surgical Association of Louisiana; member of the Southeastern Surgical Congress; fellow of the American College of Surgeons; served 27 consecutive years as a member of the House of Delegates of the American Medical Association, and was a member of its Council on Medical Service; on the staff of St. Francis Hospital, where in 1956 a golden anniversary dinner was held, honoring him on the occasion of his 50 years in the practice of medicine; an operating room at the hospital was dedicated to him; died Nov. 10, aged 80.

Hanlon, Morgan Patrick Ⓜ Springfield, Mass.; Tufts College Medical School, Boston, 1917; member of the American Society of Anesthesiologists, Inc.; veteran of World War I; on the staff of the Mercy Hospital; died Nov. 16, aged 64.

Hunter, William Gordon Ⓜ Carson City, Nevada; University of Georgia Medical Department, Augusta, 1913; veteran of World War I; died Nov. 2, aged 70.

Kammerling, Theodore Simon Ⓜ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; specialist certified by the American Board of Ophthalmology and the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; served on the staff of the Chicago Eye, Ear, Nose and Throat Hospital; died in a nursing home at Bellwood Nov. 20, aged 77.

Keith, Charles Frank Ⓜ Williams, Calif.; University of California School of Medicine, San Francisco, 1921; veteran of World War I; died in the Colusa (Calif.) Memorial Hospital Nov. 5, aged 63.

Kerr, John Cleon, St. Petersburg, Fla.; University of Pittsburgh School of Medicine, 1912; at one time on the faculty of his alma mater; member of the West Virginia State Medical Association and the American Academy of Dermatology and Syphilology; an associate member of the American Medical Association; past-president and secretary of the Harrison County (W. Va.) Medical Society; served overseas during World War I; formerly practiced in Clarksburg, W. Va., where he was on the staffs of the St. Mary's and Union Protestant hospitals; died in the Mound Park Hospital Nov. 20, aged 71.

Kline, Edith Cordelia, Columbus, Ohio; Woman's Medical College of Pennsylvania, Philadelphia, 1905; member of the Ohio State Medical Association; died Nov. 6, aged 82.

Kneedler, Harry Dome, Berkeley, Calif.; Beaumont Hospital Medical College, St. Louis, 1892; veteran of the Spanish–American War and the Boxer Rebellion; among the persons interned by the Japanese in Manila during World War II; died Nov. 5, aged 88.

Kuhlman, Harry H., Phoenix, Ariz.; University of Southern California School of Medicine, Los Angeles, 1952; served a residency at the Margaret Hague Maternity Hospital in Jersey City and the North Carolina Memorial Hospital in Chapel Hill; veteran of World War II and later served in the medical corps of the U. S. Air Force; associated with St. Joseph's Hospital, where he served a residency and an internship; died Nov. 9, aged 35.

Landry, Wallace James Jr. Ⓜ New Orleans; Louisiana State University School of Medicine, New Orleans, 1947; specialist certified by the American Board of Radiology, Inc.; president-elect of the New Orleans Radiological Society; instructor in radiology at the Tulane University School of Medicine; associated with the Mercy Hospital and the Charity Hospital, where he served an internship and residency; died Nov. 15, aged 44.

Langsdon, Fred Ronald Ⓜ Gaston, Ind.; Indiana University School of Medicine, Indianapolis, 1922; veteran of World War I; town health officer and school physician; served as chief of staff, Ball Memorial Hospital in Muncie; died Nov. 2, aged 65.

Lanier, Raymond Ray Ⓜ Denver; Washington University School of Medicine, St. Louis, 1944; head of the department and professor of radiology at the University of Colorado School of Medicine; served an internship and residency at the University of Chicago Clinics in Chicago, where he was instructor of roentgenology, 1948-1949, and assistant professor of roentgenology, 1949-1950; an officer in the medical corps, Army of the United States, from 1946 to 1948 serving as chief of x-ray at the 179th Station Hospital and 183rd General Hospital in Alaska; member of the Radiological Society of North America and the American College of Radiology; served as president of the Colorado Radiological Society; associated with the Colorado General, Denver General, St. Joseph's, Swedish, and the National Jewish hospitals; died in the Holyoke (Colo.) Hospital Nov. 24, aged 44.

Leddy, Donald Valentine Ⓜ Ridgewood, N. J.; born in New York City, Feb. 14, 1923; Georgetown University School of Medicine, Washington, D. C., 1948; interned at the Walter Reed Army Hospital in Washington, D. C., where he served a residency in psychiatry; certified by the National Board of Medical Examiners; member of the American Psychiatric Association; first lieutenant in the officers' reserve corps from 1948 to 1951, when he transferred to the medical corps of the regular Army; resigned his commission as lieutenant colonel in 1957, after serving for three years in Germany; associated with St. Joseph's Hospital in Paterson and the Valley Hospital; died in the New York Hospital, New York City, Nov. 7, aged 35.

Levinson, Marvin Seymore, Chicago; Chicago Medical School, 1954; certified by the National Board of Medical Examiners; formerly an officer in the U. S. Naval Reserve; interned at the Cook County Hospital; served a residency at the Michael Reese Hospital, where he died Nov. 21, aged 29.

Lewy, Alfred Ⓜ Chicago; born in Wetumpka, Ala., April 9, 1873; Chicago Homeopathic Medical College, 1897; Rush Medical College, Chicago, 1898; later studied in Berlin, Germany; specialist certified by the American Board of Otolaryngology; at one time on the faculty of the General Medical College; member of the American Academy of Ophthalmology and Otolaryngology and the American Otological Society; served as vice-president of the American Laryngological, Rhinological and

Otological Society; past-president of the Chicago Laryngological and Otological Society; fellow of the American College of Surgeons; assistant city physician for the City of Chicago for 50 years; formerly consultant to the Home for the Friendless; for many years attending otolaryngologist at the Illinois Charitable Eye and Ear Infirmary, attending otolaryngologist at the Cook County Hospital, and staff member of the Chicago Memorial Hospital; contributed numerous articles to the medical journals; died in the Michael Reese Hospital Dec. 14, aged 85.

Lovett, Irving Kennedy, Red Bank, N. J.; Johns Hopkins University School of Medicine, Baltimore, 1916; member of the Medical Society of New Jersey; veteran of World War I; served in the regular Army; associated with the Monmouth Memorial Hospital in Long Branch and the Riverview Hospital; died Nov. 2, aged 68.

McGhee, John B. Ⓜ Chattanooga, Tenn.; Medical Department of Grant University, Chattanooga, 1894; died in the Baroness Erlanger Hospital Nov. 5, aged 85.

Mace, Vernie Emmett, Huntington, W. Va.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1930; veteran of World War I; on the staff of the Huntington State Hospital; formerly on the staff of the Weston State Hospital; died Nov. 23, aged 61.

Mahoney, Daniel Francis Collins, Redlands, Calif.; Georgetown University School of Medicine, Washington, D. C., 1924; member of the California Medical Association; veteran of World War I; died Oct. 31, aged 62.

Makel, Hertel Philip Ⓜ Colonel, U. S. Army, retired, Moorestown, N. J.; Johns Hopkins University School of Medicine, Baltimore, 1915; service member of the American Medical Association; fellow of the American College of Physicians and the American College of Surgeons; veteran of World Wars I and II; entered the regular Army in 1918 as a first lieutenant; rose through the various grades to that of colonel in 1943; retired Sept. 30, 1946 for disability in line of duty; died in the Veterans Administration Hospital in Lyons Nov. 7, aged 70.

Massa, Anthony, Boston; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1915; a medical officer with the Italian Army during World War I; died in the New England Deaconess Hospital Nov. 2, aged 71.

Matousek, William Joseph Ⓜ Glendale, Calif.; Rush Medical College, Chicago, 1921; a recipient of the Silver Beaver and Silver Antelope Awards for distinguished service to the Boy Scouts; in 1952 named to the advisory committee of the National Board of Boy Scouts; associated with the Memorial Hospital, where he served as president of the staff; named the "Physician of the Year" in Glendale in 1949 by the Glendale Branch of the Los Angeles County Medical Association; died Nov. 21, aged 69.

Means, Philip Corydon, Chula Vista, Calif.; born Oct. 11, 1872; Harvard Medical School, Boston, 1902; specialist certified by the American Board of Otolaryngology; veteran of World War I; past-president of the Kent County (R. I.) Medical Society and the Santa Barbara County Medical Society; member of the Association of Military Surgeons of the United States; for many years practiced in Santa Barbara, where he was past-president of the school board, and on the staffs of the St. Francis and Santa Barbara Cottage hospitals; formerly practiced in Merrimac, Mass., where he was on the school board; died in San Diego Nov. 3, aged 86.

Mendenhall, Arthur Junnius Ⓜ Los Angeles; Marquette University School of Medicine, Milwaukee, 1937; interned at the California Hospital; veteran of World War II; chief of staff of the French Hospital; died in St. Vincent's Hospital Nov. 2, aged 54.

Meyers, Daniel, Portland, Ore.; Medico-Chirurgical College of Philadelphia, 1913; also a graduate in pharmacy; died in the Good Samaritan Hospital Nov. 2, aged 70.

Miller, Minnie Ethel Reid, Blackwell, Okla.; Kansas City (Mo.) Homeopathic Medical College, 1901; died Nov. 17, aged 82.

Moore, George Albert Ⓜ East Bridgewater, Mass.; born in North Monroe, N. H., Dec. 22, 1878; Harvard Medical School, Boston, 1911; member of the founders group of the American Board of Surgery; fellow of the American College of Surgeons; at one time director of the Massachusetts division of the American Cancer Society; served in France during World War I; for many years associated with the Moore Hospital, of which he was a founder and medical superintendent; served on the staff of the Brockton (Mass.) Hospital; consultant, St. Luke's Hospital and Lakeville State Sanatorium in Middleboro, Bridgewater (Mass.) Hospital, Plymouth County Hospital, South Hanson, Jordan Hospital in Plymouth, and the Veterans Administration Hospital in Brockton; died Nov. 3, aged 79.

Souther, Robert Fulton, Gloucester, Mass.; Boston University School of Medicine, 1899; formerly associated with the Veterans Administration Hospital in New York City; died in the Veterans Administration Hospital in Boston Sept. 25, aged 82.

Wesenberg, William Robert Ⓜ Mound City, Ill.; Vanderbilt University School of Medicine, Nashville, Tenn., 1912; died in St. Mary's Hospital, Cairo, Oct. 24, aged 71.

FOREIGN LETTERS

FRANCE

Soya Oil and Cholesteremia.—R. Wolff and co-workers (*Presse méd.* **66**:1706, 1958) found that soya oil had a high iodine number and could have a hypocholesteremic action because of its degree of nonsaturation and its abundance of β-sitosterol. Five lots of six to eight rabbits each were subjected to a special feeding with 3 ml. of soya oil per kilogram of body weight. The duration of this diet did not exceed eight days. As early as the next day after the administration of soya oil, a drop in serum cholesterol to about 73% of the initial value was noted. Clinically, 15 subjects, aged from 50 to 70 years, were given 1.5 cc. of soya oil before each of the two main meals. In six subjects for whom the diet was continued for only 6 to 11 days, a constant fall of the total cholesterol to about 84% of the initial value was noted. In nine subjects in whom the administration of soya oil was of longer duration (average 63 days), the findings were heterogenous and difficult to interpret. Despite the abundance of nonsaturated fatty acids and fatty acids of the essential type, the action of soya oil on cholesteremia was questionable. Factors other than the nonsaturation of the fats must determine the blood cholesterol level.

Cardiovascular Accidents from Asthma.—J. Turiaf and co-workers (*Presse méd.* **66**:1543, 1958) analyzed a series of 747 patients with asthma and found it was mainly the 40-to-50-year-old man with asthma, whatever his occupation, who was threatened (in the ratio 4:1 as compared with women of the same age group) by cardiovascular accidents. Cardiac insufficiency is favored by continuous dyspnea; frequent, prolonged, and violent paroxysms; and profuse and infectious bronchial catarrh. Infrequent and intermittent asthmatic attacks do not affect severely the cardiovascular system but at most may produce slight rotation and deviations in the electrical axis. Such conditions as acute cor pulmonale, cardiovascular collapse, and right or left myocardial ischemia without peripheral evidence of cardiac embarrassment are exclusively related to the status asthmaticus. Right auriculoventricular hypertrophy and chronic insufficiency of the right heart are related to asthma with continued dyspnea. Acute cor pulmonale (4% of the patients with status asthmaticus) may be cured without sequelae by treatment of the status asthmaticus. Myocardial ischemia (1% of the patients with status asthmaticus) may be asymptomatic and diagnosed only by electrocardiography. It may be cured by treatment of the status asthmaticus. Cardiovascular collapse (12% of the patients with status asthmaticus) is a severe accident, not necessarily developing on the basis of acute or chronic cardiac insufficiency.

Exudative pericarditis is rarely seen. Auriculoventricular hypertrophy (18% of the patients) is a real emergency but not necessarily relevant to established chronic cor pulmonale. Chronic cor pulmonale (5.4% of the patients) shows the usual features of that cardiac insufficiency which is a complication of bronchopneumonopathy unrelated to asthma. Pulmonary arterial hypertension, subsequent to the alveolar anoxia, and also the vascular disorders of vasomotor and allergic origin are the essential sources of cardiac accidents in the asthmatic patient. Treatment of cardiac affections due to asthma should aim at restoring the bronchial ventilation, the impairment of which produces pulmonary arterial hypertension and humoral disorders (anoxemia, hypercapnia, gaseous acidosis, and electrolytic imbalance). The prevention of cardiovascular accidents from asthma is dominated by the rational treatment of the asthma itself, the allergy, and the bronchial infection. The "alarm-status" is a formal indication for the use of delta-cortisone. The treatment of cardiovascular accidents from asthma is based on the use of delta-cortisone or ACTH, combined in the case of status asthmaticus with blood-letting, in the case of bronchial infection with antibiotics, and in the case of impairment of gaseous exchange and blood pH with oxygen and acetazolamide. Cardiovascular collapse requires a tracheotomy prior to artificial respiration, then slow venous infusions of ACTH and levarterenol. Delta-cortisone operates through restoration of the pulmonary ventilation, diuretic effect by direct action on the kidney, and antiallergic protection.

Allergy to Ricinus Plant.—R. Panzani (*Presse méd.* **66**:1788, 1958) reported a series of 152 patients (101 adults and 51 children) with respiratory allergy to the castor oil plant, of which 132 had asthma, 16 spasmodic coryza, and 4 bronchial spasm. In 15 patients the allergy was isolated, but in the others it was combined with an allergy to dust, mildew, linseed, or cottonseed. All of the patients were living either in Marseilles where there are castor oil factories, or in southeastern France

The items in these letters are contributed by regular correspondents in the various foreign countries.

where ricinus cakes are used as fertilizer for vegetable gardening. A positive scratch-test with ricinus extract always indicated allergy to this plant. The author recognized three clinical forms of allergy: (1) that occurring in persons exposed to ricinus in their occupation or their lodging (15 cases); (2) that combined with an allergy to dust or mildew in persons also particularly exposed (26 cases); and (3) a combined allergy in persons with no intensive exposure (111 cases). In the first two groups the prognosis was unfavorable unless the patient was able to change lodging or occupation. In the third the prognosis was favorable in 95 patients, but the remaining 16 were compelled to leave those regions contaminated with ricinus. Treatment consists in removing the patient from these contaminated regions and also in desensitizing him.

INDIA

Pallor as Test for Anemia.—Saxena and Kavathekar (*Journal of the Indian Medical Profession*, vol. 5, August, 1958) studied 200 factory workers who complained of general debility and pallor of the skin of the face, conjunctiva, and nails. Most of them had to do hard manual labor and belonged to about the same social and economic group. Their ages varied between 20 and 45 years. Respiratory diseases other than tuberculosis (mostly nasal and bronchial catarrh) were found in 22.5%, fever (mostly malaria) in 20%, no organic diseases in 16.2%, gastrointestinal diseases in 12.5%, tuberculosis in 6.5%, and miscellaneous diseases (cutaneous, venereal, and dental) in the rest. Hematological examination was normal in 56.5% despite the obvious pallor. The rest had macrocytic hypochromic anemia. Most of these patients were used to a diet deficient in certain factors which may account for the hypochromia while the presence of chronic gastritis and lack of erythrogenic factors may have been responsible for the macrocytosis. Most of the patients with debility showed an increase in the erythrocyte count and packed cell volume and a hyperchromia. These findings may have been due to dehydration leading to hemoconcentration, or the hemoconcentration may have been part of the reaction to chronic stress. An increased sedimentation rate was also found in most of these patients and may also have been due to chronic stress.

Occupational Health Conference.—Inaugurating the second Asian Conference of Occupational Health in Calcutta in November, the State Health Minister stated that occupational health should concern itself not only with the prevention of disease and reduction of industrial hazard but also with the promotion of educational programs among the workers because physically and mentally alert workers are an asset to any industry. Illness cannot be divorced from the social environment and mental climate in which a man lives. Occupational health should therefore pay attention to the need for team work in such fields as medicine, psychology, and personnel management. The need for this was indicated by the fact that occupational diseases accounted for only 10% of man-days lost in industry while nonindustrial diseases and injuries accounted for 90%. The problem common to all Asian countries is rapid unplanned urbanization resulting in acute housing shortages. Another problem in Asia is the rapid growth of population. India is one of the few countries which has accepted a policy of family planning. The death rate in most countries has declined on account of improved health conditions but there has been no corresponding fall in the birth rate and this poses a serious problem.

SWEDEN

Blood Flow Studies.—Robin Fåhraeus (*Nordisk medecin*, vol. 60, Oct. 23, 1958) stated that reduced suspension stability of the blood or slowing down of its flow gave rise to visible aggregation of the erythrocytes in the small vessels (granular flow or sludging). In the wider arterioles the intravascular aggregation produces a more concentrated axial stream of the erythrocytes and a broader marginal stream of the plasma. The consequence of this is that the transport of the red cells is accelerated at the expense of that of the plasma, and the viscosity of the blood is reduced. On the other hand, the aggregates of the erythrocytes offer a resistance to the blood flow in the narrower arterioles and at the entrance to the capillaries. This was proved by measuring this resistance through determining the filterability of the erythrocytes. This filterability was decreased in proportion to the increase in the sedimentation rate. When the suspension stability is reduced, aggregates of red blood cells block the smallest vessels and cause tissue damage.

New Laxative.—Dulcolax (4.4-diacetoxy-diphenyl=pyridyl—2=methane) was used by Ole Eklöf (*Nordisk medecin*, vol. 60, Oct. 30, 1958) on 148 unselected outpatients in preparation for x-ray examination. It was given orally and rectally instead of the conventional castor oil and enemas. The results were encouraging in about 67% of the patients. In only nine was further cleansing by enema necessary. In 28 of 41 patients who had been previously examined with use of the conventional purgation, the result with Dulcolax appeared to be better than or as good as those observed earlier. The preparation provided a simple form of purgation. It was particularly suitable for outpatients and was time-saving for the x-ray department of the Karolinska Hospital in Stockholm.

Antihistamine for Burns.—The effect of anihistamine treatment on the urinary excretion of histamine, catechol amines, and adrenocortical steroids, and

on the elimination of dextran and serum albumin was studied in nine severely burned patients by G. Birke and co-workers (*Acta chirurgica scandinavica*, vol. 115, 1958). No effect was observed with the promethazine treatment on the amount of histamine in the blood and urine. The urinary excretion of epinephrine was as high as in those not treated with promethazine during the first day after the accident but during the second day was significantly lower. The amount of levarterenol showed no significant difference in the two series. The excretion of corticosteroids was within normal limits, and significantly lower than in the patients treated without promethazine. The elimination of dextran and serum albumin was within the same range as in those not treated with an antihistamine. The significantly lower excretion of corticosteroids even on the second and fifth days in the promethazine-treated patients might be taken to indicate the favorable effect of antihistamine in severe burns.

Angiography of the Thigh.—Stener and Stener (*Acta chirurgica scandinavica*, vol. 115, 1958) reported on five cases of malignant tumors of the soft tissues of the thigh which were subjected to angiography before operation. They believe that this examination could in many cases strongly reinforce suspicions of malignancy, though it could not remove them. One advantage of angiography is that it can be used for preoperative localization of the tumor. Temporary occlusion of the common iliac artery may be indicated in certain patients in whom incisional biopsy for frozen section is taken in connection with the definitive operation. The purpose of this measure is to lessen the risk of disseminating tumor cells in the operative field. The resultant bloodless field also facilitates exact operative technique.

Hypocalcemia and Acute Pancreatitis.—R. E. Lilljekvist (*Acta chirurgica scandinavica*, vol. 115, 1958) investigated the diagnostic value of blood calcium determinations (1) in acute pancreatic necrosis associated with a normal urine diastase level, (2) as a means of differentiating pancreatic necrosis and other types of acute pancreatitis, and (3) in excluding pancreatic necrosis in patients with acute upper abdominal diseases with or without increased diastase activity. He studied 98 patients with suspected biliary and/or pancreatic tract diseases and made simultaneous blood calcium and urine diastase tests. Nothing was found to indicate that changes in blood calcium could be caused by cholecystitis, bile duct obstruction, or operation per se, when not complicated by acute pancreatic necrosis.

The blood calcium values were consistent with the clinical signs. Of the 11 most severely ill patients, with clinical signs suggestive of pancreatic necrosis, 10 had hypocalcemic levels on one or more occasions. The 11 in whom autopsy revealed a hemorrhagic pancreatitis without necrosis had a normal blood calcium supporting the suggested pathogenesis of hypocalcemia in acute pancreatic necrosis. In five patients with evidence of acute pancreatitis (though less severe than would indicate pancreatic necrosis) no lowered blood calcium values were obtained. In only two patients were unexplained low calcium levels found and in one of these the diagnosis could possibly have been relapsing acute pancreatitis. In one of the 10 patients with hypocalcemic levels, the urine diastase content remained normal; in 4 an initial rise returned to a normal level with the onset of hypocalcemia; in 8 the hypocalcemia persisted longer than the diastase elevation; in 2 in whom exacerbation of an acute pancreatic necrosis was suspected, the blood calcium level became once more subnormal while the diastase values remained within normal limits.

The author concluded that pancreatic necrosis as a rule lowered the blood calcium level directly proportional to the extent of the necrosis. It is suggested that blood calcium determinations provided a better indication as to the development of this disease than urine diastase tests. Furthermore, the conditions causing elevated urine diastase output of nonpancreatic origin did not produce hypocalcemia, and conditions causing hypocalcemia of nonpancreatic origin did not increase diastase values. Thus blood calcium determinations should be considered a valuable complement to the diagnostic tests used in patients with acute upper abdominal diseases.

UNITED KINGDOM

New Drug for Leprosy.—At the British Pharmaceutical Conference in Llandudno Dr. F. L. Rose stated that a new drug, Etisul (diethyl dithiol isophthalate), is effective in the treatment of leprosy. Trials were made by Dr. T. Davey, head of the Nigerian Leprosy Service Research Unit, Uzuakoli, who found that it was active when administered by inunction. The drug was said to have no toxic side-effects and to produce sufficient clinical improvement within three months to permit the discharge of the patient from the leprosarium without danger to others. It was found by Rose and co-workers that compounds liberating ethyl mercaptan in the body had an antituberculous action. A search was then made for a safe, odorless, and quickly absorbed drug capable of releasing this compound in the body. Over 400 compounds were synthesized and screened before Etisul was prepared. It was found to have positive antituberculous activity and this was regarded as useful indirect evidence of an antileprotic action. Administration of Etisul by inunction avoids the pain of injection and the formation of the distasteful and unpleasant-smelling ethyl mercaptan. The small amounts of this that are formed in the ointment are masked by a suitable scent.

The Nation's Health.—Sir John Charles of the Ministry of Health (Report of the Ministry of Health for 1957, pt. II, Her Majesty's Stationery Office, London) stated that although tranquilizers may be of great benefit in mental hospitals, their indiscriminate use can do much harm. Apart from the complications and side-effects that may occur, the regular use of either sedatives or tranquilizers can lead to physical and psychic dependence. One test of a mature personality is the capacity to face reality and tackle difficult situations with courage and determination. These qualities are ignored if tranquilizers are used too freely.

On new drugs the report states that, despite the usual procession of new drugs appearing on the market, it is doubtful that more than a few will make a lasting contribution to medical progress. There has been a sober reassessment of various forms of treatment, many of which were embraced enthusiastically on their introduction but have failed to live up to their initial promise. Regarding antibiotics the current problem is not so much the need for new ones as the too liberal prescribing of those already available for minor conditions from which spontaneous recovery is expected. Sir John adopted a skeptical attitude toward the treatment of diabetes with orally administered drugs and leveled criticism at the type of research carried out by the pharmaceutical companies. "It may be worth while considering whether the amount of effort now being applied to *ad hoc* drug studies, designed in most cases to produce quick results, is not disproportionately large in relation to scientific investigations of a more fundamental nature on which the long-term advance of medicine depends."

Recent outbreaks of typhoid have been associated with an unusual strain of Salmonella typhi, and infected oysters have been incriminated as one of the causes of spread. There were four cases of smallpox, two resulting in death; a case of indigenous malaria, the first for three years; and five cases of tetanus from one area. Only 43% of infants under one year of age received primary vaccination against smallpox. There was a steep rise in the number of new cases of gonorrhea in both sexes—from 16,377 to 19,620 in men, and from 4,011 to 4,761 in women. It is now apparent that penicillin, effective as it has been, cannot by itself make a lasting impression on this disease. There is a misplaced faith in the one-injection treatment, with failure to attend the clinic for follow-up examinations. The number of reported cases of scarlet fever fell below 30,000 for the first time; the rates in some rural areas fell to as low as 5 per 100,000. Reporting of this disease is of epidemiologic value as it is an index of the extent of streptococcic infection. In some outbreaks of sore throat without a rash nephritogenic strains of streptococci were isolated, and in at least one area penicillin was given prophylactically to those in close contact with the disease.

The incidence of lung cancer continues to rise. This disease and automobile accidents pose the two greatest public health problems. Deaths from bronchogenic cancer in men rose to 16,430, or 815 more than in the previous year. This is an increase of 5.2%. There were 2,689 deaths from this disease in women, an increase of 118 over the previous year.

The crude death rate of 11.5 per 1,000 is believed to be about as low a figure as can be expected. The increase of births over deaths, 208,511, was the highest in eight years. In his introduction Sir John states that human relations might be improved in some hospitals, where some of the staff adopt a too impersonal attitude toward the patients. This is attributed to the pressure of work rather than to any intentional neglect.

Aldosterone Antagonists for Ascites.—Patients with cirrhosis of the liver have a tendency to develop ascites. When ascitic fluid accumulates, very little sodium is excreted, while potassium excretion remains relatively normal. As this is the pattern found in hyperaldosteronism, and as many patients with cirrhosis of the liver excrete large amounts of aldosterone, Sherlock and co-workers (*Lancet* 2:1084, 1956) treated the condition with aldosterone antagonists. A new steroid, 17-spirolactone, with anti-aldosterone activity, SC 8109, was used for this purpose. It was given to three patients with hepatic cirrhosis and intractable ascites that did not respond to bed rest, sodium restriction, and diuretics. The patients were given a diet containing a constant amount of sodium, potassium, and protein and a fixed fluid intake of 1,800 ml. daily. Injections of 250 mg. of SC 8109 were given twice daily for five days. A sodium and water diuresis occurred in two of the patients. Intramuscular injection of a microcrystalline preparation was tried. This resulted in slow absorption of the steroid, the maximum effect being obtained about a week after treatment was started. Some activity was detected even after two weeks.

Centenary of the General Medical Council.—The General Medical Council of Great Britain celebrated its centenary on Nov. 23, a date which marked the first practical step toward a united and well-organized medical profession in Britain. It was brought into being by the Medical Act of 1858, which was introduced to enable the public to distinguish between qualified and unqualified practitioners and to regulate the education and qualifying examinations of physicians. The Council also maintained a register of physicians and laid down a code of ethics to be observed. Failure to comply with these rendered the offender liable to exclusion from the register. This could be done for canvas-

sing patients, employing or associating with unqualified assistants, conviction by a civil court for criminal offenses, and illicit relations with patients. Until recently there was no legal appeal against a decision of the Council, which has always been loath to drop a name from the medical register. For this reason an ingenious system of probation was introduced in 1882, based on postponement of judgment for a fixed period. This permitted the offender to reform his ways. It is now possible to appeal to the courts against a decision of the Council. The Council has done much for medical education and one of its early tasks was to prepare the first British Pharmacopoeia, to replace the three pharmacopeias that were being used in Scotland, Ireland, and England and Wales.

Army Trains Medical Soldiers.—At a meeting in the British Medical Association Hall Major General W. D. Hughes, Commandant of the Royal Army Medical College, stated that although in the past the acceptable interval between wounding and surgical intervention had been taken to be six to eight hours, we must now accept an interval of up to eight days during which casualties must survive with the medical resources immediately available. Mass casualties can be divided into five groups, four according to the site of injury (head, chest, abdomen, and limbs), and one for all burns. What is needed is not a team of nursing specialists but highly trained, general nursing orderlies. In the training of such orderlies an entirely new approach is being used. No attempt is made to thrust the theory of anatomy and physiology down their throats. Instead, 24 nursing procedures have been defined and incorporated in the training program. Trainees take an enormous interest in these procedures. Trained orderlies now provide the skilled nursing element of the new Army field medical companies. These mobile companies, designed for handling mass casualties, have a strength of 48 (all ranks) and 100 beds. They can care for 100 casualties for eight days.

Antihistamines for Thermal Injuries.—Wilhelm and Mason (*Brit. M. J.* Nov. 8, 1958) stated that mild heat treatment of the skin of the guinea pig is followed by prompt but short-lived increase in vascular permeability which is mediated by histamine. With moderate heat treatment the prompt response is followed by a longer, delayed response which is mediated neither by histamine nor by any other recognized endogenous permeability factor. If man reacts in the same way, a substantial liberation of effective histamine would be expected only after a mild burn with no ostensible damage to or rupture of the skin; little or none would follow moderate or severe burns, owing to changes in the tissues that either inhibit histamine liberation, restrain the movement of liberated histamine to susceptible blood vessels, or otherwise alter the capacity of the vessels to manifest a permeability effect. Since the histamine effect lasts only 10 minutes, in any efficient treatment of mild burns by an antihistamine the drug would have to be applied within a few minutes, either locally in a form capable of rapid penetration of unbroken skin or intravenously. Moreover, since the intensity of the delayed vascular response observed was not diminished when the early histamine effect was neutralized, the antihistamine would do nothing to inhibit these delayed effects, even supposing the burn were severe enough to induce them; but histamine liberated and held in the tissue of more severe burns might later be released to the detriment of surrounding tissues, and consequently prophylactic antihistamine might diminish later deleterious responses to the injury.

Radiation Danger.—According to Sir John Cockcroft a great deal was learned in the last three years from three reactor accidents which led to partial melting out of the reactor fuel elements. Although two of the reactors were put out of commission for a year, and one was destroyed, no one received an overdose of radiation from these accidents. The results of the accidents agree in a remarkable way with experimental work which showed that only a small fraction of some of the bone-seeking isotopes escape from the melted fuel. The disturbances due to these accidents were accordingly less than envisaged previously. Later generations of reactors are much better protected by containment and instrumentation, and reactors built now are thought to be proof against the maximum credible accident. With an increase in safety of operation we may in due course expect the location of plants in more populated areas. There has also been a growth of national organizations for reactor safety and inspection, similar to those for aircraft, which inspect designs and prescribe codes of operation to help to maintain safety.

Safety of Mass X-ray Surveys.—Studies made by Allsopp and Stanford of Guy's Hospital Medical School showed that the dose of radiation received by people examined by mass x-ray units is negligible. Their investigations were made as part of a survey of the medical uses of ionizing radiations being carried out by a government committee. They concluded that any radiation hazard is much less than that of having an unsuspected tuberculous lesion. Many physicians believe that in the public's reaction to the risks of x-rays the pendulum has swung too far.

Address by Minister of Health.—The Minister of Health, addressing the annual meeting of the Executive Council's Association (England), said that in the last 10 years there has been a noticeable

swing from the drug mixtures made up by the local pharmacist to preparations made by large firms which have facilities for research, manufacture, and analytical control. In 1948 mixtures compounded by pharmacists accounted for 33.3% of the total preparations supplied and factory-made products for 29.2%. Last year the respective figures were 18 and 43.1%. It may be asked whether the decrease in the number of preparations made up by the pharmacist has led to a decline in his professional responsibilities. The minister believed that these responsibilities have not declined, although they have altered in nature. He further stated that the dramatic decline in incidences of tuberculosis and deaths from diphtheria were due mainly to the new methods of treatment. On cancer of the lung and smoking, he said: "It is an example of prevention of disease in which the individual must himself decide what he should do, in the light of the facts . . . unwelcome as they are bound to be to many people." He welcomed the developments that have taken place in the provision of home care for the aged because the highest priority which the available funds allow should be given to helping older people remain as long as they can in their homes. There has been a decrease in areas regarded as understaffed with physicians. The average number of patients per physician is now 2,250, compared with 2,500 in 1948, and the number of general practitioners taking part in the National Health Service has increased from about 17,500 to more than 20,000.

Idle Electroencephalograph.—An electroencephalograph has lain idle at St. Clement's Hospital, Ipswich, for a year, because a technician cannot be obtained at $1,400 to $2,100 a year. Suitable technicians cannot be obtained for this salary and the Ministry of Health will not permit an increase. Technicians can obtain far more in the electronics industry. The hospital deals with psychiatric cases and patients are being sent to another hospital 20 miles away for electroencephalograms.

Duties of Nurses.—Leading hospital consultants are alarmed at proposals that nurses should confine themselves to nursing and cease to perform certain medical procedures. They fear that the result may be a breakdown in the hospital service in some areas. A committee of the Royal College of Nursing has been studying the position and duties of the nurse from a legal point of view. Most of their views are supported by the consultants, but the latter are worried by suggestions that nurses should no longer take blood samples from patients or give intravenous injections. Already in Sheffield chief nurses have issued instructions forbidding nurses to take blood samples. The consultants say that if the restrictions are extended hospital work will be impeded. The shortage of hospital physicians in many parts of the country necessitates the help of nurses with some procedures. If nurses cannot do such things as taking blood samples and applying plaster casts it will be impossible to run some hospitals. Nurses also propose to stop doing clerical and domestic chores, to make possible the implementation of the 44-hour week for nurses recently agreed on. Even in some large London teaching hospitals this has not yet been achieved. Almost everywhere nurses work overtime without extra pay, especially in mental hospitals.

Pay Rise for Doctors.—Although a pay rise of 29% was requested for physicians by the British Medical Association, the Ministry of Health decided to increase pay by only 4%. An interim adjustment of 5% was made in May, 1957. These adjustments do not prejudice any recommendations likely to be made by the Royal Commission on Doctors' Remuneration, which is not expected to report until summer. The method of distributing the 4% rise is to be discussed with the British Medical Association, which has suggested that a percentage increase should be applied to capitation fees (at present $2.45 per patient per year), car mileage, and maternity fees. This will be to the advantage of country doctors, who treat more obstetric patients and travel longer distances to see fewer patients than doctors in towns. The Ministry of Health vetoed any increase in specialists' merit awards, which have remained the same for 10 years, in spite of rising prices and wages. The *British Medical Journal* comments on this: "It would not have cost the Treasury much to make a small acknowledgment to merit, and enterprises outside State control long ago found that they could ill afford not to foster this quality." Hospital physicians and dentists will also share in the 4% rise which will cost about 14 million dollars annually. The increases dated from Jan. 1, 1959. The extra for general practitioners will cost nearly $5,600,000 and will raise their average annual income from $6,550 to $6,812. This rather belated decision to increase salaries followed repeated requests by the British Medical Association, beginning a year ago. There was then some justification for a refusal owing to the country's financial state, but now that the nation's economy has improved, an increase of 4% is regarded as a meager figure.

Treatment of Cancer by Irradiation and Oxygen.—Tissues are more sensitive to irradiation at high oxygen tensions. Dr. I. Churchill-Davidson, radiotherapist at St. Thomas' Hospital, London, stated at a press conference recently that 67 patients with inoperable cancer were treated at the hospital by irradiation in a compression chamber in which pure oxygen was breathed. The patients were anesthetized before being put in the chamber. A

five-year follow-up will be necessary to see if this method of treatment offers any advantage over conventional radiotherapy.

Retinal Coagulation.—A new apparatus for the treatment of retinal detachment, developed by Dr. M. Schwickerath of Bonn, Germany, was installed at Moorfields Eye Hospital, London. It is a light coagulator working on the principle of the burning glass. An electric arc enclosed in a quartz tube containing pressurized neon is the source of the light, which is passed through a system of lenses and then through an ophthalmoscopic mirror. The eye surgeon directs a filtered part of the beam on the lesion in the fundus. When this is accurately located the full beam is passed for a fraction of a second to produce a minute burn on the retina. Several treatments seal off the lesion. The eye is anesthetized and the patient experiences no more discomfort than he would in an examination with an ordinary ophthalmoscope. At present this technique is being used only for the treatment of retinal holes and thin areas not deeply detached, Eale's disease, retinitis proliferans, retinal hemangiomas, small malignant melanomas, and for optical iridotomy.

Fellowship for Freedom in Medicine.—Dr. R. Hale-White, the chairman of the Fellowship for Freedom in Medicine, said in an address at the annual general meeting that the National Health Service (NHS) was lowering the standards of medicine with increasing speed each year. He referred to the views of Sir Hartley Shawcross, a lawyer who was in the last Labor government who believed in the need for private practice. To a questionnaire circulated to a group of physicians asking whether they thought an alternative health service should be formed over 75% answered "yes." The government, said Dr. Hale-White, must be urged to permit private patients to obtain their drugs under the same conditions as NHS patients. Another speaker, Brigadier Skentelbury, said that as it is responsible to Parliament the NHS must be bedevilled with politics no matter what party is in power. A hospital that was completely independent would be more effectively run at less cost than one subject to the restrictions and extravagance of centralized administration. The NHS sought to apply civil service methods of centralized control, but the Civil Service was unfitted by training, aptitude, and organization to solve the problems of hospitals. If free medical care is supplied, why not free food, free drink, free travel, or free entertainment? The proper solution is relief by insurance.

Treatment of Tetanus.—Tetanus is usually treated with barbiturates and neuromuscular blocking agents, both of which depress respiration. There is a need for a drug in the treatment of this condition that can suppress the convulsions without interfering with respiration or causing loss of consciousness. Laurence and Webster described a method for screening likely drugs by producing local tetanus in the gastrocnemius of rabbits with tetanus toxin (*Brit. J. Pharmacol.* **13**:330, 334, 1958). The drug under test is injected intravenously and the time required for suppression of tetanic activity noted. Chlorpromazine, thiopental sodium, betanaphthoxyethanol, and mephenesin were compared using this test. Chlorpromazine was the most active, being over 250 times as effective as mephenesin and more than 50 times as effective as thiopental. Other phenothiazine derivatives screened by the authors included acetylchlorpromazine, which was found to be 10 times as potent as chlorpromazine.

Tetanus in the Operating Room.—Lowbury and Lilly showed that Clostridium tetani is present in the air of operating rooms in Birmingham (*Brit. M. J.* **2**:1334, 1958). They collected bacterial samples from the air with a large slit sampler and made cultures in nutrient gelatin with settle plates. Sampling for 30 minutes showed the presence of Cl. tetani in the air of the road adjacent to the hospital and in the air of exhaust-ventilated operating rooms. None of these organisms was found in a plenum-ventilated burns dressing station. As no cases of clinical tetanus have been reported from the hospitals in the last nine years, the risk of infection appears to be remote. Cl. tetani was also found in all specimens of hospital floor dust, in the trouser cuffs of laboratory staff, and in 10 of 35 human fecal specimens. It was not found in any of 273 swabs from burns.

Mental Deficiency due to Carbon Monoxide.—Damages were awarded to a truck driver who became mentally deficient after inhaling fumes in an oil carrying truck. The plaintiff inspected the oil tank and climbed inside. Fumes overpowered him, and he lay unconscious in the tank as the truck was driven by a mechanic from the garage to the street. It was stated that in starting the engine in a confined space, carbon monoxide accumulated and entered the tank of the truck where it was inhaled by the plaintiff. He was eventually missed and found half an hour later unconscious in the tank. He remained unconscious for 10 days. On recovery he was found to be suffering from serious and permanent cerebral damage resulting in organic dementia bordering on stupor. A neurologist testified that although the plaintiff's physical condition was normal he did not know the date or time, could recognize coins only with difficulty, could not add small numbers, did not know the names of his brothers or sisters, and could not dress himself properly. In the neurologist's opinion the plaintiff's condition was consistent with cerebral damage due to inhaling carbon monoxide. He was permanently

demented and no form of treatment was likely to help him. The defendants denied liability and claimed that the plaintiff was not required to clean the tank. Drivers were in fact forbidden to enter a tank before it had been treated and this one had not. The jury found the employers liable. They assessed total damages at $49,000 but held the plaintiff to be 40% at fault, so he was awarded only $29,400.

Too Many X-rays.—In his report for 1957, the health officer for Smethwick referred to the many diagnostic x-ray examinations that are made only because they are requested by the patient. He stated that expensive, time-consuming diagnostic procedures involving repeated irradiation of vital organs are regularly undertaken to exclude such conditions as peptic ulcer and kidney and liver disease in patients who obviously need rehousing more than reexamination by x-ray or the exclusion of in-laws rather than of liver disease. The population receives more and more radiation, said Dr. Dodds, much of it to little purpose.

Neonatal Hyperbilirubinemia.—High serum bilirubin levels have a well-recognized association with kernicterus and are often found in premature babies who may also develop this condition. Forfar and co-workers reported the results of treating premature babies by exchange transfusion to remove the bilirubin from the circulation (*Lancet* **2**:1131, 1958); 45 exchange transfusions were given to 37 infants in the first week of life. In 9 Rh incompatibility was the cause, but in the remaining 28, of whom 26 were premature, no cause other than hepatic immaturity was discovered to account for their jaundice. Fresh compatible blood in acid-citrate-dextrose mixture was transfused into the umbilical vein, which was found to be the most convenient vessel and could be used up to a week after birth. When this was unsuitable the saphenous vein was used. A volume of 80 to 90 ml. per pound of body weight (36 to 41 ml. per kilogram) was exchanged at a rate of 0.8 ml. per pound (0.36 ml. per kilogram) per minute. The transfusions removed much of the bilirubin not only from the blood but also from the infants' tissues, thus reducing the chance that the serum bilirubin would rise to levels at which kernicterus might occur. The mean pre-transfusion serum bilirubin level was 25.5 mg. per 100 ml., and the mean post-transfusion level was 11.2. Because of a subsequent rise seven infants were given further transfusions. The mean minimum mass of bilirubin removed was 19.7 mg. per transfusion, whereas the mean fall in circulating bilirubin was 10.8 mg., indicating that at least 45% of the bilirubin removed came from the infants' tissues. The volume and rate of transfusion were important. Too small a volume was ineffective, and too rapid a transfusion was both ineffective and dangerous. The only common post-transfusion complication in these patients was anemia.

Staphylococcic Infection in Maternity Hospitals.—Staphylococcic cross infection among infants in a maternity hospital was studied over two and one-half years by Gillespie and co-workers (*Lancet* **2**:1075, 1958). They found that many infants became carriers of Staphylococcus pyogenes var. aureus soon after birth and that they were the chief sources from which these organisms spread to other infants. The umbilicus was colonized before the nose, groin, and perineum to which the staphylococci spread from the umbilicus. The nose, more often than the umbilicus, harbored the group 1 strains which caused most sepsis. Nasal carriage was usually more persistent than umbilical carriage and was probably more important in disseminating hospital strains of staphylococci into the general population. Most infants who became staphylococcic carriers suffered little harm, unless the strains were of bacteriophage pattern 52A/79 or 80, which caused the most sepsis. These were most numerous in the nose. Group 3 strains were found mainly on the umbilicus. Sepsis developed more frequently in those infants who carried staphylococci on the nose and umbilicus by the second day of life. Contact by nurses was thought to be one mode of spread as the incidence of cross infection was reduced by the use of an antiseptic hand cream containing chlorhexidine. Dusting the umbilicus and surrounding skin of the infant with a powder containing hexachlorophene caused a marked reduction in staphylococcic infection. Disinfection of blankets had little or no effect but was not thought to be without value, because it might have helped if other sources of staphylococci had been reduced first.

An epidemic in a Glasgow maternity hospital, investigated by Dr. Timbury and co-workers, was due to bacteriophage-type 80 (*Lancet* **2**:1081, 1958). This caused a number of serious infections in the babies and resulted in eight deaths. Bacteriophage-typing showed that the organism had not been in the hospital before the epidemic. Spread by the nursing and hospital staff was not thought to be an important factor as the nasal carrier rate among them and the rate of colonization of the hospital environment generally was remarkably low. The staphylococci acquired in hospital caused infections shortly after the discharge home in 21% of the babies born in the last two weeks of the epidemic period. Babies who carried or were infected with type 80 organisms were followed up at home four months after discharge from hospital. Examination of nasal swabs showed no evidence that these organisms persisted longer in the nose than those of any other strain, and the danger of their spreading widely in the general population seemed slight.

CORRESPONDENCE

TYPHUS—A REMINDER

To the Editor:—We have recently seen another case of murine typhus at this hospital, undoubtedly a case of the endemic type, which from time to time flickers forth in the Southwest. In addition to the occasional sporadic case, small pseudoepidemics of murine typhus are not infrequent in this area. The reservoir of the Rickettsia responsible for this disease is the rat, and the vector is the rat flea, although the dog tick is thought to be incriminated from time to time. It is well to bear these facts in mind when any patient with a fever of undetermined origin is discovered.

I saw eight such cases in a little more than one year while in private practice in Little Rock, Ark., some 10 years ago. At the same time a case of Rocky Mountain spotted fever was seen; this case proved to be fatal. All of the patients with typhus made complete recovery. Three of these received no antibiotics. The remaining five received chlortetracycline. Of these five, three developed no specific agglutinins, and it was felt that this was due to the fact that antibiotic therapy was started early in the disease. The three patients who did not receive specific antibiotics developed specific agglutinins and had debilitating and prolonged illnesses. All of the five who received antibiotics showed rapid and complete recovery with no debilitation, although, as in the three who were untreated, most of them developed delirium at one time or another during their illness.

Since being at this hospital I have seen three cases of typhus in addition to the one to be reported. These all ran true to form. The diagnosis is not difficult to make. The history invariably reveals that the patient has rats on his property or in the place in which he works. This is particularly true of farmers who have feed rooms or feed bins. The onset is rather sudden, with very high fever and very severe headache. These symptoms are accompanied by chills and drenching sweats. On the fourth to sixth day (usually the fifth day) of the disease, there is an evanescent, macular rash, usually over the upper part of the trunk, which persists from 12 to 30 hours, the average being around 18 hours. If therapy is then begun with any of the tetracyclines, there is defervescence to 100 F (37.8 C) or less within a period of 36 to 48 hours. In one of the patients seen in Little Rock the temperature dropped from 105.2 to 97.8 F (40.7 to 36.6 C) in a three-hour period, 27 hours after the institution of chlortetracycline therapy. The case to be reported here shows all the typical features of murine typhus.

The patient was a 65-year-old man who was admitted to this hospital on Sept. 10, 1958, complaining of generalized aching and fever. On Sept. 7 the illness had begun with chills, general malaise, fever, and drenching sweats. He had been given sterile procaine penicillin G suspension (Crysticillin) and phenoxymethyl penicillin (V-Cillin) tablets by his local physician. On the day of admission he had been nauseated and had vomited two or three times. On the same day he complained of mild chest pain and some abdominal soreness, as well as severe frontal and hatband headache. The physical examination was not remarkable except for the fact that the patient was flushed and perspiring profusely and looked acutely and severely ill. There were a few crepitant rales in both lungs. For the first five days of hospitalization his temperature ranged from 101 to 104.4 F (38.3 to 40.2 C), for the most part being over 103 F (39.4 C). On the fourth hospital day he developed an evanescent, macular rash over the chest and back, which faded in less than 24 hours. It was then found that his avocation was raising chickens, that he had feed bins, and that there were "literally hundreds of rats around the place." At this point the diagnosis was made, and therapy with a combination of tetracycline phosphate and nystatin (Mysteclin-V) was instituted. In less than 36 hours, his temperature was less than 100 F and thereafter did not go above that level. On his admission multiple agglutinations were found to be negative, and when his Proteus vulgaris OX-19 agglutination was repeated on Sept. 12, it was still found to be negative. However, on the 9th hospital day and again on the 14th hospital day he was found to have a positive OX-19 agglutination in a titer of 1:160. From the fifth to the eighth hospital day the patient was in and out of delirium. He made an uneventful recovery.

In any case of unexplained fever, particularly when there is a history of rats in the vicinity and the patient develops an evanescent rash on the fourth to sixth day of illness, typhus should be seriously considered and treatment instituted with one of the tetracyclines immediately.

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WOMAN PHYSICIANS

To the Editor:—In Medical News in THE JOURNAL of Dec. 20, 1958, on page 2160, a statement appears which is frequently made and is not quite correct. It is in regard to the Elizabeth Blackwell award, and it states that Elizabeth Blackwell was "reportedly the first woman doctor in the world." It is more correct to speak of Elizabeth Blackwell as the first woman doctor of modern times, and even this is not quite true because there is the case of Dr. James Barry, a medical officer in the British Army, who died in London in 1865 and was found at post mortem to have been a woman. In the Greco-Roman period there were women physicians; in the Middle Ages there was the famous woman doctor, Trotula, who served on the faculty of the Salerno Medical School during the eleventh century; and later in the eighteenth century there was Dr. Ann Monzolini, professor of anatomy at the University of Bologna. An interesting account of women physicians is found in "Women Doctors of the World" by Esther Pohl Lovejoy, published in 1957, and I recommend it to all who are interested in the history of medicine.

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F.B.I. ITEMS IN THE JOURNAL

To the Editor:—I protest against the editorial policy of THE JOURNAL which permits the F.B.I. to use it as a vehicle for catching criminals. Perhaps one could understand it, even though not condoning it, if the malefactor sought was an insane physician, who had committed homicides, or a criminal mastermind of a group of burglars looting physicians' offices for narcotics; but such is not the case. Manson, the wanted criminal, is a bankruptcy swindler.

Years ago when Dr. May was sentenced to two years in prison for harboring the notorious Dillenger, the *Lancet* published an editorial suggesting an accolade for him for being true to the spirit of the Hippocratic Oath. The late Lord Horder, a leader of British medicine and physician to the King, once publicly declared that if he were acting as a surgeon and had treated a man with a bullet wound and immediately thereafter heard broadcast his description, as a bank robber, he felt no obligation to inform the police. Perhaps this is too zealously guarding professional confidentiality, but if the present policy in this country is continued, the physician's examining room will resemble a rural post office, with its walls plastered with photographs of wanted criminals. The physician is still an important influence in moulding public opinion. Let him not use this influence to create a police state. Physicians have a high sense of social responsibility, but this does not call for them to act as special agents for the police.

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NEONATAL INFECTIONS IN COMMUNITY HOSPITAL

To the Editor:—The following is an addendum to my article on page 559 of this issue of THE JOURNAL. After a communication from the Department of Clinical Investigation of Parke Davis & Company received on Jan. 26, a review of the relationship of chloramphenicol therapy to the cases reported in my article was undertaken; 22 of the 30 patients received on Jan. 26, a review of the relationship of the 12 who died 10 were given chloramphenicol orally, intramuscularly, or intravenously in doses ranging from 50 to 313 mg. per kilogram per day. Most of these infants were given about 150 mg. per kilogram per day. It was pointed out by the communication from Parke Davis & Company that large doses of chloramphenicol, when given to premature and newborn infants, produced the following findings, and sometimes death:

1. Abdominal distention within two or three days of institution of therapy.
2. A so-called gray syndrome consisting of progressive pallid cyanosis with abdominal distention.
3. Vasomotor collapse.

It is believed that the causal factor is related to the immature functional status of the liver and kidneys with respect to glucuronide conjugation and/or excretion.

In at least three (cases 28, 29, and 30) and possibly two (cases 19 and 24) of the deaths reported in this series, chloramphenicol could be implicated in the unfortunate outcome. The patients in cases 28, 29, and 30 died rather suddenly in vasomotor collapse. The patients in cases 29 and 30 were given chloramphenicol as a prophylactic measure only, and these deaths may well have been iatrogenic in origin. Two other infants (cases 14 and 18) receiving chloramphenicol presented rather sudden abdominal distention, cyanosis, and apparent cardiac failure, but recovered. The oldest infant of this series in which the symptoms may have been related to chloramphenicol was 3½ weeks of age.

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MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Diagnostic Aspects of Subacute Bacterial Endocarditis in the Elderly. W. J. Gleckler. A. M. A. Arch. Int. Med. **102**:761-765 (Nov.) 1958 [Chicago].

The author reports on 6 men and 4 women, between the ages of 57 and 81 years, with subacute bacterial endocarditis, seen consecutively at the Community Hospital of San Mateo County in San Mateo, Calif., during the past decade. Three of the 10 patients showed the typical clinical features of the disease, with a heart murmur, fever, leukocytosis, enlargement of the spleen, anemia, weight loss, and embolic phenomena. The remaining 7 patients presented difficult diagnostic problems. Three of these had clinical signs and symptoms of psychosis, and one each presented the aspect of gastrointestinal disease, renal insufficiency, apoplexy, and simple weight loss without fever. The high incidence of atypical cases is characteristic of subacute bacterial endocarditis in older persons. The only clinical sign or symptom constantly present in this group of patients was a heart murmur.

The chief obstacles to diagnosis in patients of advanced age are the common occurrence of a variety of pathological processes of differing causation in the same person and the difficulty in distinguishing the clinically most significant findings. The disease often seems simply to accentuate previously present pathological processes, and it is easy to assume the accentuation to be due to advancement of the originally present process rather than to a new additional disease. Helpful in making the right diagnosis is the presence of a heart murmur. Also, when it was measured, the serum protein pattern always showed reversal of the albumin-globulin ratio. No other single clinical sign or symptom was present in all these patients. It might well be said that the presence of a heart murmur should be a reminder of the possibility of subacute bacterial endocarditis in any elderly patient, even if the rest of the clinical picture would seem to suggest the presence of a psychosis, renal insufficiency, gastrointestinal malignancy, or other unconnected illness.

The Syndrome of Ventricular Septal Defect With Aortic Insufficiency. R. C. Scott, J. McGuire, S. Kaplan and others. Am. J. Cardiol. **2**:530-553 (Nov.) 1958 [New York].

The authors report on 7 patients, 4 male and 3 female, between the ages of 5 and 34 years, with the syndrome of congenital ventricular septal defect associated with aortic insufficiency. Two of the patients died, and the diagnosis was confirmed in both by autopsy. The diagnosis in 5 patients was supported by cardiac catheterization, in 1 in addition by an angiocardiogram and a retrograde aortogram, and in 1 by exploratory thoracotomy. There was usually a history of exertional dyspnea and frequently of congestive heart failure. The positive physical findings consisted of an enlarged heart, a loud systolic murmur most commonly heard maximally in the left 2nd to 4th interspaces, and a high-pitched aortic diastolic murmur transmitted down the left sternal border. A continuous murmur was heard in one patient. The pulse pressure was wide in all the patients. Cardiac fluoroscopy revealed an enlarged heart with a prominent pulmonary arch segment, pulmonary overcirculation, and dynamic pulsations of the aorta. The electrocardiogram showed left ventricular hypertrophy in 3 patients, combined ventricular hypertrophy in 3, and right bundle branch block in 1. Cardiac catheterization revealed pulmonary hypertension and an increase in oxygenation at the right ventricular level.

The cases of 22 patients, between the ages of 5 and 57 years, with ventricular septal defect with aortic insufficiency were collected from the literature. In some of these the diagnosis was confirmed by autopsy, and in the others the diagnosis rested on physical, laboratory, or surgical findings. In all the cases proved by autopsy, one or more of the aortic valve cusps were either thickened and deformed or unsupported, or both. In several cases the affected valve was described as being sacculated, ballooned, or even having an aneurysmal dilatation. Nine of the patients on whom autopsies were performed had cardiac catheterization studies done.

The precise preoperative or antemortem diagnosis of this syndrome may be difficult at times. The described clinical features, while characteristic,

The place of publication of the periodicals appears in brackets preceding each abstract.

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are not pathognomonic, as are other conditions with to-and-fro or continuous murmurs at the base of the heart, and an additional wide pulse pressure may simulate the syndrome of ventricular septal defect with aortic insufficiency. Cardiac catheterization is helpful in indicating a left-to-right shunt at the level of the right ventricle. However, other conditions than a ventricular septal defect can produce increased oxygenation in the right ventricle. These include ruptured aneurysm of the sinus of Valsalva into the right ventricle and patent ductus arteriosus or aortic septal defect with pulmonic valve insufficiency. In the two latter conditions passage of the catheter from the pulmonary artery into the aorta will help distinguish these defects from the present syndrome. Because of the possibility of surgical treatment for intracardiac and extracardiac lesions associated with left-to-right shunts, the correct diagnosis of the syndrome of ventricular septal defect with aortic insufficiency becomes mandatory.

Shock in Acute Coronary Thrombosis and Treatment with L-Nor-Adrenalin. O. Lindeneg and N. I. Nissen. Ugesk. læger **120:**1395-1402 (Oct. 16) 1958 (In Danish) [Copenhagen].

One of the gravest and earliest complications in acute coronary thrombosis is peripheral or cardiovascular collapse, called shock because of the clinical resemblance to other forms of shock. The mechanism of cardiogenic shock is not fully clear. The indications for levarterenol therapy in clinical shock which does not respond to the usual treatment have been (1) acute grave shock lasting more than 15 minutes, (2) shock setting in slowly with moderate hypotension, lasting 1 hour or more, and (3) occurrence of more than 3 transitory shock periods within 12 hours. Thirty-four patients (21 men, aged from 48 to 82 years, and 13 women, aged from 47 to 77) with acute coronary thrombosis were treated with levarterenol. In 26 cases satisfactory increase in blood pressure was achieved; in 13 patients stable normotension could be maintained after treatment was ended, and 9 patients survived the acute phase of the thrombosis and were discharged as well. In general, the prognosis was unfavorable when high dosage of levarterenol was necessary to keep the blood pressure up. The prognosis was better for younger patients, but the mortality was not higher among patients with earlier coronary thrombosis and heart insufficiency than among the others. Disturbances in conduction and arrhythmia were not more frequent during treatment with levarterenol than before it. The frequency of heart rupture was not especially high. Pulmonary edema was frequent but occurred as often before as during treatment. In some cases cortisone was administered simultaneously, but its effect could not be estimated. This material, together with the reports in the literature, indicates that levarterenol therapy, instituted early and carried out carefully, is of value, but further experience must be collected.

Hydroquinidine Combined with Reserpine in the Treatment of Atrial Fibrillation. F. Fontanini, A. Rivi and S. Signorelli. Minerva med. **49:**3815-3822 (Oct. 10) 1958 (In Italian) [Turin, Italy].

Two groups of patients, each consisting of 20 persons who had atrial fibrillation but who had not had either marked cardiovascular insufficiency or past embolic disorders and who had not previously received treatment for restoration of heart pulsation, were placed on hydroquinidine and reserpine therapy. As an anticoagulant 100 mg. of heparin was administered intravenously to the patients every 6 hours for 3 days to prepare them for the main chemotherapy. The day before treatment with hydroquinidine and reserpine was begun, 200 mg. of hydroquinidine was given to all the patients so as to eliminate those who could not tolerate the drug. Then, one group of patients received a maximum daily dosage of 2 Gm. of hydroquinidine alone in doses of 400 mg. administered orally every 2 hours for 1 or 2 days. The other group received a maximum daily dosage of 2 Gm. of hydroquinidine combined with 2 mg. of reserpine in doses of 100 mg. of hydroquinidine, 0.10 mg. of reserpine, and 2 mg. of adenosine, administered orally every 2 hours for 1 or 2 days.

Sinus rhythm was restored in 12 patients receiving hydroquinidine alone (60%) and in 16 patients receiving the combined treatment (80%). The combination of hydroquinidine and reserpine permitted use of a smaller dose of hydroquinidine. Patients who benefited from hydroquinidine alone received, on the average, a dose of 1.30 Gm. of hydroquinidine, whereas the patients who benefited from the combined treatment received, on the average, a dose of 1.07 Gm. of hydroquinidine. Reserpine partly offset the tachycardiac effect of hydroquinidine. An increased heart frequency was observed in 3 patients, 2 of whom were refractory to the therapy. Heart frequency decreased in most of the remaining patients. Tolerance to hydroquinidine was satisfactory, although it varied among individual patients, but in no instance did it reach an intensity requiring an early withdrawal of the drug. The main advantage in using the combination of hydroquinidine and reserpine in this series of patients consisted in the counterbalancing action of reserpine on the tachycardiac effect characteristic of hydroquinidine. It also seems that the combination of hydroquinidine and reserpine exhibits a synergic action for the treatment of atrial fibrillation, although further investigation is necessary to appraise this presumption.

Gastrointestinal Haemorrhage and Salicylates. A. S. Alvarez and W. H. J. Summerskill. Lancet **2**:920-925 (Nov. 1) 1958 [London].

The authors report a planned investigation of the relationship between salicylate consumption and gastrointestinal hemorrhage in consecutive admissions to a community hospital, with careful attention to salicylate habits, both of the subjects studied and of a control group. Of 121 patients hospitalized with hematemesis and/or melena, 18 were excluded from the study because of bleeding associated with trauma. There remained 103 patients in whom bleeding was thought to be associated with acute or chronic peptic ulceration. The onset of hemorrhage was timed from symptoms of faintness or collapse or, in their absence, from objective evidence of bleeding. Details of habitual salicylate consumption and salicylate consumption during the 72 hours before bleeding were taken immediately. These included the time the drug was taken, the number and type of tablets, the method of and reason for their consumption, and dyspeptic symptoms of intolerance, if any. Salicylate habits and consumption within the preceding 72 hours in a control group complaining of dyspepsia, but not of gastrointestinal bleeding, were assessed in 103 consecutive new outpatients attending the gastroenterologic clinic.

Barium-swallow-and-meal examinations were carried out in all patients in both groups, except 10 who had operations or died as a result of hemorrhage. The effect of doses of salicylate and nonsalicylate analgesics on dyspeptic symptoms and stool occult blood content was investigated in 35 subjects, 14 of whom had had peptic ulcers. The local action of salicylates on the stomach was studied at partial gastrectomy for peptic ulcer. Four patients received aspirin for 5 days before the operation and with the premedication; 8 patients, for control purposes, received no salicylate.

Salicylates could be incriminated in more than 40% of the 103 patients admitted to hospital with hematemesis and/or melena associated with peptic ulcer. The lesion induced by salicylate was difficult to define at gastroscopy or at partial gastrectomy. The clinical history, together with findings at emergency partial gastrectomy, indicated that acute erosions in the stomach, and possibly lower in the gastrointestinal tract, were sometimes responsible, although activation of a preexisting chronic peptic ulcer often seemed likely. No alteration of prothrombin time due to salicylates was found in patients with gastrointestinal bleeding. Occult blood loss in the stools occurred during periods of salicylate consumption in approximately 50% of patients with peptic ulcer or x-ray-negative dyspepsia and of controls. Patients with previous dyspepsia were more liable to massive hemorrhage, but occult bleeding occurred equally in all groups. Both soluble and insoluble aspirin caused occult bleeding, but nonsalicylate analgesics did not influence the stool occult blood content. There was no evidence that soluble aspirin reduced the risk of major bleeding; neither were dyspeptic symptoms of intolerance nor the method of taking salicylate preparations related to the occurrence of hematemesis and melena.

Clinical Use of a Single Daily Dose of Para-Aminosalicylic Acid in Association with Isoniazid. E. V. Bridge and D. T. Carr. Am. Rev. Tuberc. **78**:749-752 (Nov.) 1958 [New York].

The authors studied the efficacy of a single daily dose of para-aminosalicylic acid (PAS) given with isoniazid to 70 patients with tuberculosis admitted to Mineral Springs Sanatorium, Cannon Falls, Minn. The bacteriological studies necessary for analysis of therapeutic results were completed in 47 patients. Twenty-three of the 70 patients were excluded for various reasons, such as exclusively extrapulmonary location of the disease, resistance of the tubercle bacilli to PAS or isoniazid before treatment, or premature departure from the hospital. Twenty-three of the 47 patients were men, whose average age was 56 years, and 24 were women, whose average age was 41. Forty patients had had no previous antituberculous chemotherapy, and 7 had had such treatment previously. Tubercle bacilli were recovered from all 47 patients. The disease was minimal in 11 patients, moderately advanced in 22, and far advanced in the remaining 14. Para-aminosalicylic acid was given as tablets of the sodium or calcium salt, the dosage being 7 Gm. (or 5 Gm. of PAS) each morning after breakfast. The conventional dosage of isoniazid, 150 mg. twice a day, was given also. Specimens of sputum or gastric washings were cultured for acid-fast bacilli before treatment and at monthly intervals during treatment.

Three of the 47 patients were unable to take the recommended dose of PAS. A few patients had some gastrointestinal irritation but were able to continue treatment with the same or another salt of para-aminosalicylic acid. Three patients switched to a proprietary preparation of para-aminosalicylic acid, Rezipas, with satisfactory results. Although tubercle bacilli had been recovered from all patients before treatment, after 2 months of treatment tubercle bacilli were recovered from only 9 (19%). After 4 months of treatment only 5 (11%) had cultures positive for tubercle bacilli, a conversion rate of 89%. After 120 days of treatment tubercle bacilli susceptible to both PAS and isoniazid were recovered from 2 patients. Treatment was continued, and cultures from these 2 patients were negative for tubercle bacilli at the end of the study. Drug-resistant bacilli were recovered from 3 patients. Results showed that a single daily dosage of 5 Gm. of PAS (7 Gm. of the sodium or calcium salts)

given in association with 150 mg. of isoniazid twice daily was better tolerated and was equally as effective as the conventional dosage of 3 Gm. of PAS given 3 or 4 times a day. The advantages of less gastrointestinal irritation and economy suggest that this regimen should be studied more extensively.

Sarcoidosis: Clinical Observation on 160 Cases. H. L. Israel and M. Sones. A. M. A. Arch. Int. Med. **102:**766-776 (Nov.) 1958 [Chicago].

The authors report on 55 male and 105 female patients with sarcoidosis, seen in clinic, hospital, or office practice in Philadelphia between 1938 and 1956. Of the 160 patients, 138 were Negroes and 22 were whites. Eighty-eight (more than 50%) were between the ages of 21 and 30 years, and 35 were between 31 and 40; only 25 were less than 21, and 12 were over 40. Predominance of Negroes and the high prevalence of the disease in females are noteworthy facts that must be taken into consideration in attempts to ascertain the causation of the disease by epidemiolgic study. All the patients had one or more biopsies revealing epithelioid tubercles. There was a wide range of clinical manifestations, with peripheral adenopathy observed in 110 patients, cutaneous sarcoids in 45, erythema nodosum in 3, enlargement of liver and spleen in 54, ocular lesions including enlargement of lacrimal glands in 28, and parotid enlargement in 10. White blood cell counts below 5,000 per cubic millimeter occurred in 59 patients (37.5%). Eosinophilia was observed in 21.8%. Hyperglobulinemia with values greater than 3.5 Gm. per 100 cc. occurred in 103 patients (45.6%). Seventy-two per cent of the patients failed to react to conventional second-strength doses of tuberculin (0.005 mg. of purified protein derivative), 22% reacted to second-strength tuberculin, and 6% manifested a reaction to first-strength tuberculin. Tuberculosis proved to be a complication in 6 of the 160 patients. Roentgenographic evidence of pulmonary or tracheobronchial lymph node involvement was observed in 151 patients (95%). Thirteen patients died; 2 deaths were due to tuberculosis and 11 to progressive sarcoidosis, with respiratory insufficiency due to progressive pulmonary damage being the commonest cause of death.

Corticosteroid therapy is indicated in many patients with sarcoidosis and can safely be given to those whose diagnosis is supported by careful clinical and laboratory study. Marked improvement resulted in 61% of the patients with symptoms of less than 6 months' duration, while a similar degree of improvement occurred in only 29% of the patients with symptoms of longer duration. Marked clearing later occurred spontaneously in a few patients whose diffuse pulmonary lesions showed no response to cortisone. It should not be assumed that sarcoid lesions unaffected by cortisone are irreversible. Cortisone and its derivatives appear to be as effective as corticotropin and are more conveniently administered. An initial daily dose for the adult of average weight is 40 mg. of prednisone or prednisolone for 10 days. The dose should be reduced gradually to the lowest level which maintains the desired effect. The total duration of treatment, as a rule, is 1 or 2 months.

SURGERY

Surgical Considerations in Cerebral Arterial Insufficiency. W. S. Fields, E. S. Crawford and M. E. DeBakey. Neurology **8:**801-808 (Nov.) 1958 [Minneapolis].

More extensive use of angiograms in patients with suspected cerebral arterial insufficiency has revealed that a lesion contributing to the syndrome may be located extracranially in approximately 25% of patients. This report concerns 71 patients in whom extracranial, occlusive disease of the carotid, vertebral, or innominate vessels was suspected. Extracranial lesions were demonstrated by angiographic examination in 47 patients, and 32 patients with 42 lesions were subjected to operation. The lesions found at operation were located in the innominate artery in 5 instances, the left common carotid artery in 4, the subclavian artery in 4, the vertebral artery in 2, and the internal carotid artery in 27, they were bilateral in 10 of the 32 patients. The lesions were partially occluding in 16 internal carotid, 1 innominate, 4 left common carotid, 2 vertebral, and 3 subclavian arteries and were completely occluding in 11 internal carotid, 4 innominate, and 1 subclavian arteries.

Treatment was directed toward restoration of a normal pulsatile blood flow to the brain distal to the occlusion. To achieve this objective, 2 types of procedures—thromboendarterectomy and end-to-side bypass graft—were employed. Thromboendarterectomy was accomplished by opening the involved artery and removing a localized segment of intima containing the obstructing atheromatous mass. The bypass-graft technique consisted of the insertion of a graft, with one end sutured to the uninvolved artery proximal to the lesion and the other end sutured to the uninvolved artery distal to the lesion. For successful application of these techniques, the lesion had to be located extracranially and discretely localized, with a reasonably normal patent segment of artery both proximal and distal to the obstruction. Patients were selected for operation on the basis of arteriographic findings.

The results of operation varied with both the location and the extent of the lesion. For example, a reasonably normal distal circulation was restored

in 15 of the 16 patients with partial occlusions of the internal carotid artery. Due to the extensive nature of the lesion and lack of a distal patent segment, circulation was restored in only one patient with complete occlusion of the internal carotid artery, which had prevailed for less than 3 days. Occlusion in the other patients had been complete for 2 weeks to several months. Circulation was restored in one patient with partial occlusion of the vertebral artery but not in another patient with more extensive occlusion of the vertebral artery. Restoration of circulation was successful in all patients with occlusion of the great vessels originating on the aortic arch. Preoperative symptoms of 14 patients consisted of intermittent hemiplegia frequently accompanied by aphasia and headache. These symptoms were relieved completely. Persistent symptoms were relieved in a number of patients, including aphasia in 2, partial blindness in 3, paresis of an extremity in 3, ear noise in 3, and mental obtundity in 3. Follow-up studies during the past 5 years have indicated that occlusion recurred in only the first patient treated by thromboendarterectomy. Failure was considered due to certain techniques that are no longer employed.

Cardiomyotomy (Heller's Operation) for Oesophageal Achalasia. W. F. P. Gammie, D. Jennings and J. E. Richardson. Lancet **2**:917-920 (Nov. 1) 1958 [London].

At the International Congress of Gastroenterology in 1956 Heller's operation was criticized to the effect that the circular muscle at the lower end of the esophagus is the functional sphincter preventing reflux of gastric contents and that Heller's operation may completely destroy this sphincter or it may fail to do so. If the circular muscle is not destroyed, dilatation with retention will persist; if it is destroyed, reflux of acid will lead to peptic esophagitis, and the operation will be no safer than cardioplasty. Since the authors had gained the impression that Heller's operation generally produced excellent results, they reexamined their patients to see whether the results were really as good as they thought. They review observations on a consecutive series of 18 patients with achalasia, observed for 2 to 9 years and followed up after cardiomyotomy for 2 to 8 years. There is doubt whether achalasia is a single disease. The most generally accepted explanation is a toxic, infective, senile, or nutritional degeneration of Auerbach's plexus in the body of the esophagus; possibly some cases are congenital and analogous to megacolon (Hirschsprung's disease).

The authors say that in most patients the lower part of the esophagus was approached by a transthoracic incision, and in a few by an abdominal incision. While the length of the surgical incision into the muscular layer varied, it was always extended down to the stomach and up to a point thought to be well above the narrow segment. There were no surgical deaths among these patients, but 2 of the 18 had unfortunate sequels. The results obtained suggest that they were largely determined by the stage in the disease at which the operation was performed.

The authors differentiate 3 stages. In the first stage, there is a discrepancy between the patient's story and what is seen on the x-ray screen. Sometimes esophageal contractions are completely irregular, but there is no clinical history of dysphagia, and the barium meal is requested for an unrelated complaint such as diarrhea or ulcer. More often the reverse happens; there is a story of repeated episodes of difficulty in swallowing, but the x-ray changes are slight. In the second stage, difficulty and discomfort recur at every mealtime; the esophagus begins to enlarge, and there is some delay in the barium swallow. Characteristically, the first mouthfuls of barium pass into the stomach; and then the esophageal muscle begins to "tire" and stretch, and the barium is retained. At first these changes are reversible. In the third stage, the esophagus is dilated and elongated; there is considerable retention of food, and, if any contractions occur, they are only shallow ripples. If this stage is allowed to persist, the changes become irreversible. If the esophagus is enlarged and food is retained, cardiomyotomy gives better results than hydrostatic dilatation of the cardia. Postoperative roentgenographic studies suggest that results are better if operation is done early, but there is some evidence that operation can be done too early. The authors feel that cardiomyotomy by itself does not lead to incompetence of the cardia or to gastroesophageal reflux. Bad clinical results are seen after making too short an incision or after operating on patients with "diffuse spasm," that is, after operating too soon.

Pernasal Transsphenoidal Yttrium Implant of the Hypophysis. W. M. S. Ironside and R. D. Moseley Jr. Postgrad. Med. **24**:497-504 (Nov.) 1958 [Minneapolis].

Since it was demonstrated that beneficial results could be obtained with hypophysectomy in certain cases of advanced cancer of the breast and the prostate, numerous routes to the pituitary have been used and methods of excision or destruction have been employed. An increasing number of patients are being subjected to procedures in which the pituitary is necrotized by implanting radioisotopes. The authors reviewed various routes to the pituitary and methods of destruction. They felt that complete destruction was more likely to follow the implant of multiple discrete sources of the radioisotope of yttrium (Y^{90}), 1 by 2 mm., rather than the 2 larger sources, 2 by 6 mm., and that the nasal

route held many advantages, the most important of which was the lower mortality rate. Furthermore, adequate local anesthesia was considered sufficient to perform the nasal operation, a considerable advantage when dealing with these rather debilitated patients. The small Y^{90} beads, which have an activity of about 1 mc., are implanted under fluoroscopic control. Generally 8 beads are implanted, but as many as 11 and as few as 6 have been used. Variations in the size of the sella and the accuracy of deposition of individual beads determine the total number deposited.

Although some 40 of these operations have now been carried out since June, 1957, only the first 26 are reviewed, for at least 2 months are required to determine the effects of the procedure. The patients were all considered unlikely to benefit from further conventional surgery, roentgenotherapy, or endocrine therapy. Moreover, the early operations were done on patients who were in a very advanced, or even terminal, stage of metastatic disease. All patients required a maintenance dose of cortisone, which averaged 50 mg. daily. Pitressin Tannate was administered to those patients in whom diabetes insipidus developed. Thyroid replacement therapy was not started until signs of hypothyroidism developed, and this does not occur for at least 2 months postoperatively. Twenty-one of the 26 patients had a primary lesion of the breast; 4, of the prostate; and 1, of the ovary. Eleven patients with breast cancer appeared to benefit. The estimation of the result was based on clinical observations, such as cessation of vomiting, increase in appetite, weight gain, changes in size of cutaneous or subcutaneous lesions, and x-ray studies of metastatic lesions. Relief of pain was the most dramatic feature in those gaining benefit from the procedure. Only 4 patients have shown a true regression, with sclerosis of osteolytic lesions, etc. All 4 patients with carcinoma of the prostate showed improvement after Y^{90} implant. Improvement was evidenced by return of appetite, disappearance of bone pain, resumption of ambulation, or return of normal urinary function. The patient who had metastatic carcinoma of the ovary did not benefit.

Intrathoracic Pheochromocytoma: Including a Case of Multiple Paragangliomas of the Functional and Nonfunctional Type. H. C. Maier and G. H. Humphreys II. J. Thoracic Surg. 36:625-641 (Nov.) 1958 [St. Louis].

The authors report on 2 men, aged 25 and 48 years, and a 13-year-old boy with intrathoracic pheochromocytoma, who were operated on and in whom a paravertebral tumor was first seen roentgenographically at a time when hypertension was not manifest. The younger adult patient was known to have had the tumor 3 years before hypertension was observed. This finding suggests that a patient with a thoracic pheochromocytoma may change from an asymptomatic status to a symptomatic hypertensive state without obvious enlargement of the tumor. In this patient excision of the pheochromocytoma was followed by a gradual return of the blood pressure to normal within the course of 2½ years, while usually a rather rapid decrease may occur. The older man had no definite hypertension when a rounded mass, with smooth, well defined outer border located at the level of the right hilus, was shown on a routine roentgenogram of the chest. Removal of the tumor was not followed by significant blood pressure changes. Pathological examination of the operative specimen revealed a pheochromocytoma proved by chemical analysis. The case of this patient illustrates that a functioning pheochromocytoma can be present in the absence of hypertension. It is not justified to conclude that the absence of hypertension rules out pressor activity.

The case of the 13-year-old boy was unusual, since he had 3 (and possibly 4) independent tumors of the paraganglionic type. The first tumor was a functional chromaffin paraganglioma or pheochromocytoma associated with the right kidney, which was removed when the patient was 11 years old. The second tumor was an asymptomatic intrathoracic tumor of the same type, originating in the 5th thoracic sympathetic ganglion, which was removed 2 years after the previous excision of the hypertension-producing perirenal pheochromocytoma. The third tumor was a nonchromaffin paraganglioma of the right carotid body, which was removed 5 years after the excision of the intrathoracic pheochromocytoma. Still 4 years later an intraspinal tumor occurred at the level of the 5th thoracic vertebra, which was also a paraganglioma, presumably chromaffin. Although extension into the foramen was looked for and not seen at the time of removal of the thoracic tumor, it is quite possible that the intraspinal tumor was a "dumbbell" extension of the thoracic tumor. Excision of a small segment of this highly vascular tumor resulted in copious loss of blood, and no further attempt at wide excision was made.

Paroxysmal or sustained hypertension in a patient with a tumor in the costovertebral region of the thorax should lead to the consideration of an intrathoracic pheochromocytoma. When operative manipulation of a soft vascular costovertebral tumor produces considerable fluctuation in blood pressure, even though no preoperative hypertension was recorded, the surgeon must consider the possibility of a pheochromocytoma and take precautions to avoid hypertensive and hypotensive crises by appropriate drug therapy during surgical intervention. Since pheochromocytoma may be multiple, an intrathoracic location must be considered as a possibility. Adequate roentgenographic examina-

tion of the chest, combined with urinary catechol excretion determinations, are the principal diagnostic aids. Surgical excision can effect a cure if instituted sufficiently early and with proper safeguards based on recognition of the nature and behavior of the tumor.

Abscess in the Wall of the Stomach Following Empyema of the Gallbladder. J. Boer. Nederl. tijdschr. geneesk. **102**:1805-1807 (Sept. 13) 1958 (In Dutch) [Amsterdam].

The author reports observations on a 55-year-old woman who for 3 years had been troubled with attacks of pain in the upper part of the abdomen, accompanied by vomiting, but without jaundice or fever. Complaints were somewhat less when the patient was on a low-fat diet. At operation it was found that an empyema of the gallbladder had spread, and an abscess had formed in the prepyloric region of the wall of the stomach. The abscess extended around the stomach, leaving free only the side of the small curvature. After severing the adhesions between colon and gallbladder, stomach and gallbladder were separated, and, in doing this, pus escaped from the stomach abscess as well as from the gallbladder. When the gallbladder was removed from the liver bed, it ruptured and was found to contain a stone. A stone also blocked the cystic duct. In the direction of the hepatoduodenal ligament the infectious process was less severe. The patient recovered after gastric resection with cholecystectomy. Microscopic examination showed submucous spreading of the abscess in the gastric wall. From the pathological viewpoint the lesion may be regarded either as an incomplete fistula between gallbladder and gastric lumen or as an abscess of the stomach wall.

Five Year Observations on Unsupported Fresh Venous Grafts of the Aorta in Dogs. J. E. Jesseph, T. W. Jones, L. R. Sauvage and others. Surg. Gynec. & Obst. **107**:623-630 (Nov.) 1958 [Chicago].

The authors describe the physical and functional characteristics of 4 autogenous vein grafts implanted in the aortas of dogs for more than 5 years. The implantations had been made in the course of a more extensive investigation of several aspects of vascular replacement. One facet dealt with the differences between fresh homologous and fresh autogenous venous grafts. From each of these groups representative dogs were set aside for long-term observation. Included were autogenous external jugular vein graft to abdominal aorta (1 dog), inferior vena cava autograft to abdominal aorta (2 dogs), and inferior vena cava homograft to abdominal aorta (1 dog). The initial surgical grafting procedures were all carried out under aseptic operating-room conditions. Donor venous segments, whether autogenous or homologous, were also obtained under sterile conditions at the time of operation. All anastomoses were made with a continuous over-and-over suture, using no. 4-0 or 5-0 atraumatic vascular silk sutures. After full recovery from operation the dogs were maintained at a farm where unrestricted activity was allowed and where as healthful an over-all existence as possible obtained. The dogs were recalled at intervals for a general checkup. All grafts were evaluated for dilatation by periodic aortography at intervals of several months to a year. For this procedure the dogs were lightly anesthetized with Nembutal, and contrast medium (Diodrast or Urokon) was injected through a catheter passed into the aorta through either a brachial or femoral artery. Only one of the animals was killed sooner than 5 years after grafting.

The functional result in all the grafts was excellent, with no instance of occlusion or rupture. Dilatation of varying degree occurred in 3 out of 4 of the grafts; in each instance it was early in the 5-year period of observation and was not progressive. The gross and microscopic appearance of the extirpated grafts confirmed the impression of excellent result, with good preservation of structure of the grafts, pliability, and lack of circumvascular reaction. Certain desirable features of the use of autogenous vein grafts in aortic arterial restoration are discussed with reference to the chemical modification and potential extension of the uses of such grafts.

NEUROLOGY & PSYCHIATRY

Encephalitis Presumably of Viral Origin, Associated with Massive Necrosis of the Temporal Lobe. C. L. Aszkanazy, M. I. Tom and L. R. Zeldowicz. J. Neuropath. & Exper. Neurol. **17**:565-570 (Oct.) 1958 [New York].

Necroses of the brain and spinal cord are frequently present in certain forms of encephalomyelitis, e. g., the type "B" epidemic encephalitides, poliomyelitis, and herpes simplex. These foci are usually small, often even microscopic. Extensive areas of softening have only rarely been reported. During the last few years the authors observed several patients with encephalitis in whom the significant gross lesions at postmortem examination were massive areas of softening of one or both temporal lobes. In 6 of the patients the illness ran a rapid course, death ensuing within 2 weeks; the illness in the 7th patient lasted several months. The lesions in the brains of the first 6 patients were nearly identical. The brains were congested and edematous, ranging in weight from 1,250 to 1,850 Gm. The leptomeninges were congested but otherwise normal. The cerebral vessels had normal walls, except for slight arteriosclerosis in the older

patients, and contained only fluid blood. The temporal lobe in each brain was the seat of a large recent infarct. Its undersurface was soft, often even mushy, severely swollen, and hemorrhagic. This softening extended backward from the temporal pole for approximately 5 cm., inward to the hippocampus, and in 4 cases spread upward to the insula and in 2 to the adjacent portion of the posterior frontal lobe. In the 7th patient the brain weighed only 980 Gm. The inner borders of both temporal lobes, both insulae, and the tip of the left temporal pole were shrunken and softened, and the latter contained an area of cystic degeneration.

On microscopic examination the brains all showed a widespread meningo-encephalitis of the viral type. Virus studies were made in only one of the cases. The tests suggested the presence of a human agent but excluded the majority of common neurotropic viruses, leaving only the mumps virus and the adenoidal-pharyngeal-conjunctival (APC) group. The studies were felt to be inconclusive. These cases of encephalitis displayed no remarkable clinical or epidemiologic features. They occurred sporadically in widely separated geographical areas without any specific seasonal incidence. The fact that 2 of the patients were pregnant women is probably coincidental but is perhaps due to the greater susceptibility of such persons to infection. The authors feel that extensive softenings occur more commonly in viral encephalitis than is apparent from the literature. The invariable involvement of the temporal region seems too constant to be fortuitous. This could be accounted for by assuming a special affinity of the causative agent for the temporal lobe, just as the virus of encephalitis lethargica has a predilection for the substantia nigra and that of rabies for the hippocampus, but in default of any viral isolations a distinct type of encephalitis cannot be postulated solely on the basis of the anatomic distribution of the lesions. It is assumed that this necrosis results from direct action of the virus, and its localization may indicate the route by which the central nervous system becomes infected.

Dexedrine (Dextro-Amphetamine) in Treatment of Epilepsy. P. Hertoft. Ugesk. læger **120:**1363-1367 (Oct. 9) 1958 (In Danish) [Copenhagen].

From 1955 through 1957 treatment with dextro amphetamine (Dexedrine) was given to 160 patients with epilepsy—79 with idiopathic epilepsy manifested by absence of and slight dysarrhythmia, 46 with excessive sedation, 18 with behavior disturbances, and 17 with obesity. In the first group the treatment was effective in 33 patients, 28 of whom were less than 10 years old; all were treated in addition with other antiepileptic preparations. In group 2 an effect was seen in 24 patients; in group 3 the effect was definite in 2 patients and less certain in 5; and in group 4 an effect was obtained in 10 patients. The Dexedrine dosage was 5 to 15 mg. daily. Side-effects were minor, and the treatment had to be discontinued in only one instance. Abuse of the drug was not observed. Dexedrine occupies a necessary place in the treatment of epilepsy, both in combatting the epileptic attacks and in remedying the dulling effect of some of the usual antiepileptics.

The Consequences of Longitudinal Division of the Lumbar Spinal Cord in Puppies. S. N. Ivanova. Bull. Exper. Biol. & Med. (Translation from the Russian) **45:**430-432 (April) 1958 [New York].

The author performed experiments on 20 puppies, in which the spinal cords were divided longitudinally from the dorsal side at the level of the lumbar and sacral segments. The ages of the animals varied from 1½ to 2½ months. Considerable disturbances in the hind legs were noted immediately after the surgical intervention. The animals could not stand or walk. The functions of standing and walking were not reestablished in puppies operated on at the age of 2 and 2½ months. When the puppies were operated on at the age of 1½ months, recovery occurred within 30 to 40 days after the surgical intervention. These findings suggest that, in contrast to previously reported observations on adult dogs, 1½-month-old puppies can compensate for total longitudinal transection of the spinal cord at the lumbosacral level, attaining complete restoration of the disturbed standing and locomotor functions of the posterior extremities.

GYNECOLOGY & OBSTETRICS

The Use of Hypothermic-Hypotensive Technique in Fulminant Toxemia of Pregnancy. R. H. Barter, S. N. Albert and A. W. Winshel. Am. J. Obst. & Gynec. **76:**1062-1070 (Nov.) 1958 [St. Louis].

While the antitensive drugs and the newer diuretics have improved the therapeutic armamentarium of the obstetrician in the treatment of acute toxemia, medical therapy is still of limited value, compared with the termination of pregnancy. Procrastination in emptying the uterus increases the complications, although the patient with acute toxemia of pregnancy is an extremely poor surgical and anesthetic risk. The hypothermic-hypotensive technique described in this paper was introduced to give added protection to both the patient and the fetus. The first obstetric patient at the District of Columbia General Hospital in Washington, on whom this technique was used, was one who had a puerperal gas bacillus infection. She survived the infection and the operation primarily because of the use of hypothermia, and it was de-

cided to use the hypothermic method in selected patients with acute toxemia. Ten patients thus treated comprise the basis for this report.

The ages of the patients ranged from 13 to 24 years; 7 were primigravidas. Five had eclampsia and 5 had preeclampsia of a severe degree. Three of the latter also had hypertensive vascular disease. There was one multiple pregnancy. The duration of pregnancy varied between 26 and 40 weeks. Eight of the patients were delivered by cesarean section, and 2 vaginally. The average duration of the hypothermic process (including cooling and warming phases) was 9 hours. The hypothermic level ranged between 30.5 C (86.9 F) and 33 C (91.4 F) at the time that the operative procedures were done. The patient was moved to an isolated room equipped with oxygen, a suction machine, a tracheotomy set, an electrocardiograph, and all necessary emergency medications. All 10 patients tolerated the hypothermia and the hypotension without untoward effects, and all recovered. There were no arrhythmias or any ventricular fibrillation. All the infants weighing more than 1,500 Gm. (3⅓ lb.) survived. The only death involved a fetus whose birth weight was less than 500 Gm. Only one patient had a convulsion after the return to normothermic temperature; the condition was readily controlled by sedation with intravenously administered Nembutal and by an increased dose of the antitensive drugs. A much smaller anesthetic dose was used, in addition to the hypothermia, than would normally have been required for operative delivery. The authors feel that the results obtained with this technique justify its use in the treatment of acute toxemia.

A Thirteen-Day Human Ovum Studied Histochemically. A. T. Hertig, E. C. Adams, D. G. McKay and others. Am. J. Obst. & Gynec. **76**:1025-1043 (Nov.) 1958 [St. Louis].

The authors describe histochemical observations on a normal human fertilized ovum recovered at hysterectomy during its 14th day of development. This specimen lay within horizon 6 of Streeter, possessing primitive unbranched villi and a definitive yolk sac. In order to orient this specimen in the whole spectrum of human development, the authors point out that horizon 5 is characterized as an ovum implanted but still avillous; horizon 6, as primitive villi, distinct yolk sac; and horizon 7, as branching villi, axis of germ disk defined. A small block of endometrium containing the ovum was fixed in ice-cold acetone and dehydrated at —20 C for 48 hours. It was then brought to room temperature and cleared overnight in oil of cedarwood. After a 1-hour bath in xylol, it was infiltrated in 52 to 54 C tissue mat for 3 hours. The paraffin block was stored in the freezer (—20 C) until cut.

The entire block was cut serially at 7μ, and the sections were mounted according to the method used for the study of small (up to 13 mm.) human embryos. Dry ribbons of 20 sections each were arranged in parallel rows on black tissue paper. The first section in each row (section 1, 21, 41, 61, 81, etc.) was mounted in series on a 3-by-2-in. slide for the first reaction (alkaline phosphatase). The second section of each row (section 2, 22, 42, 62, 82, etc.) was then mounted on the second slide. When all the sections had been thus mounted, each slide contained seriated sections in intervals of every 20th section. From study of the dimensions of other ova in this stage of development, it had been calculated that this interval of seriated sections would ensure that each of the 20 slides would contain at least one section passing through the germ disk area. The sections were mounted on clean albuminized slides and were spread on a thin film of distilled water with the exception of the sections for glycogen, glycoprotein, and ribonucleic acid (RNA), which were spread on a film of absolute ethyl alcohol. The slides were then drained, dried overnight at 37 C, and stored at —20 C until reacted or stained.

On the basis of their observations the authors conclude that the bilaminar germ disk is rich in alkaline phosphatase and glycogen with moderate amounts of RNA and small amounts of glycoprotein. The latter is most prominent as a basement membrane between ectoderm and endoderm. The primitive amnion and yolk sac, derived from the cytotrophoblast, contain moderate amounts of glycogen, as does the chorionic mesoblast, also derived from the cytotrophoblast. The cytotrophoblast is rich in endogenous glycogen and is presumably a source of placental glucose known to be formed early in pregnancy. The syncytiotrophoblast is rich in alkaline phosphatase, especially in the brush border, and rich in adenosine-5-phosphatase, most prominent within the cytoplasm. Ribonucleoprotein is present in this layer except at the brush border. The syncytiotrophoblast contains prominent aggregates of glycogen and cellular remnants undergoing digestion, derived from ingested endometrial glandular and stromal cells.

Adenomyosis: A Reappraisal of Symptomatology. R. C. Benson and V. D. Sneeden. Am. J. Obst. & Gynec. **76**:1044-1061 (Nov.) 1958 [St. Louis].

The manifestations of adenomyosis have been stated to be progressively severe menstrual bleeding, increasingly painful dysmenorrhea, and a gradually enlarging uterus, but it appears that the symptomatology has been largely based upon clinical assumptions and generalizations. The purpose of this investigation was (1) to ascertain the rate of occurrence, extent, and accuracy of diagnosis of adenomyosis in a private general hospital, (2) to

demonstrate how adenomyosis and concomitant significant abnormalities affect the patient, and (3) to show adenomyosis as a clinical problem exclusive of coexisting disorders capable of producing similar symptoms. It is hoped that such a reappraisal will aid in earlier and more accurate diagnosis, as well as better treatment of abnormal uterine bleeding and pelvic pain. Only cases with endometrium extending into the myometrium more than 2 standard low-power fields and associated with muscle changes were accepted as examples of adenomyosis. Included in this study were all instances of this entity treated at Emanuel Hospital, Portland, Ore., from 1950 to 1957 in women, 50 years of age or under, still having menses. During the 7-year period 2,536 total and subtotal abdominal hysterectomies and 740 total vaginal hysterectomies were performed on women in the age group from 18 through 50 years. Adenomyosis was found in 701 of the 3,276 uteri, an incidence of 21.4%.

Adenomyosis can occur in any portion of the uterus as a circumscribed lesion (adenomyoma) or, more commonly, as a diffuse process in several portions of the organ. [The authors consider these 2 types together.] It is a proliferative process, now and then obscured when fibromyomas are present. The uterus is enlarged and irregularly firm. Incision into an involved area may disclose thickening of the wall. Findings include coarsely trabeculated areas, stippled or granular in appearance, with yellowish or darker cystic points which may contain serous fluid or old blood. The cut surface appears bulging. An irregularity of the endometrial-myometrial juncture is often apparent, with dipping-down of the lining epithelium into the muscle. Microscopic study confirms the endometrial extension into the myometrium. The latter invariably is of a "hypertrophy-hyperplasia" type. This feature substantiates the diagnosis of adenomyosis.

Three groups of patients were compared by the authors: (*a*) those found to have symptomatic adenomyosis only; (*b*) those with abnormal uterine bleeding and pelvic pain with adenomyosis—together with other conditions also capable of causing these difficulties; and (*c*) those with asymptomatic adenomyosis whose uterine disease was discovered incidentally at operation. Menorrhagia was the most common sign, and dysmenorrhea was the most usual symptom of adenomyosis. Symptomatic adenomyosis was most often found in the moderately enlarged uterus. As the size increased, other associated pathological conditions (myomas, etc.) became notable. Adenomyosis was rarely found to be the sole cause of marked enlargement of the uterus. The stage of adenomyosis tended to increase with age. Parity was related to the extent of adenomyosis, to a degree, as was the duration of the symptoms of pain and/or bleeding. Myomas were frequently associated with adenomyosis, but hyperplasia of the endometrium and pelvic endometriosis were not commonly noted. The symptomatology should have led to a preoperative diagnosis of adenomyosis in many instances, but it was diagnosed in less than 10% of the cases before operation. The surgical pathologist made the diagnosis in 66.7% of the gross specimens. The observations described confirmed the traditional symptomatology of adenomyosis, which is a serious, progressively disabling disorder of the premenopausal woman.

PEDIATRICS

The Conservative Treatment of Primary Tuberculosis in Children: A Five-Year Follow-up. C. S. Breathnach. Brit. J. Tuberc. **52**:330-337 (Oct.) 1958 [London].

The author reports on 120 boys and 161 girls, less than 15 years old, with primary tuberculosis, who were followed up for 5 years. All the 281 patients were tuberculin sensitive when the diagnosis was made. The lungs were the seat of infection in 259 patients. Extrapulmonary primary lymphadenitis was found in 10 patients. The site of the infection was not detected in 12 patients. Erythema nodosum appeared in 19 girls and 6 boys; it was not seen in any child aged less than 2 years and occurred more frequently with increasing age. Treatment was conservative in most of the patients; 126 were treated by rest at home for 4 to 12 months; 101 were treated at a sanatorium for 6 months or longer, and 11 of these received chemotherapy. Right upper lobectomy was performed on 1 child, and excision of lymph nodes was carried out in 4 children with peripheral lymphadenitis. Pulmonary complications occurred in 102 patients and extensive enlargement of lymph nodes in 52, 43 of whom were aged less than 6 years. Segmental lesions were observed in 46 children, 34 of whom were aged less than 6 years. Pleural effusion occurred in 15 children. Progression to tertiary tuberculosis was detected in 2 children in the 4th and 5th years of follow-up, respectively; in both the primary complex was calcified at the time of the diagnosis. Extrapulmonary complications occurred in 6 children, 3 of whom had tuberculous meningitis and 3 had skeletal tuberculosis. Two of the 38 children, up to 1 year of age, and 2 of the 139 children, between 2 and 5 years of age, died, representing an over-all death rate of 1.4% or a rate of 2.3% among children less than 6 years of age. Three of the 4 deaths resulted from tuberculous meningitis, and 1 from widespread skeletal tuberculosis.

In the young child primary tuberculosis carries 2 grave risks: (1) hematogenous dissemination, often associated with extensive enlargement of lymph nodes, and (2) permanent bronchopulmonary dam-

age in the wake of a segmental lesion. In the older child the condition is more benign, with progression to tertiary disease the most common complication, the risk being greatest in patients whose cases are complicated by pleural effusion or in whom calcification has appeared. Chemoprophylaxis of dissemination is indicated in children aged less than 2 years with established primary infection, but BCG vaccination of children born into a tuberculous environment is recommended as the more rational preventive measure. Surgical intervention, unless acute respiratory distress supervenes, is necessary only when irreversible bronchopulmonary damage is present.

Acquired Hemolytic Anemia Accompanied by Autoantibodies in the Course of Leukemia in Children (Report of Cases). G. Di Piero and R. Attias. Riv. clin. pediat. **61**:463-489 (June) 1958 (In Italian) [Florence, Italy].

Immunological studies, consisting of the direct Coombs test and serologic tests with trypsin-modified and papain-modified erythrocytes for the purpose of establishing the presence of immune, active antibodies, were conducted on 15 children with leukemia associated with acquired hemolytic anemia. Tests with trypsin-modified and papain-modified erythrocytes were performed at temperatures of 4 and 37 C on specimens of red blood cells of group O, Rh-positive genotype. "Fixed" or circulating immune antibodies, active only at the temperature of 37 C, were revealed by serologic tests only in 3 patients. This finding was supported by the observed increased range of serum bilirubin values and by the presence of hemolysis revealed through the indirect reaction test of van den Bergh in 3 patients, as well as by the presence of urobilinuria, by the positivity of the direct Coombs test, and by the presence of anemia of varying degree in 2 patients. Serologic tests were negative in 4 children at temperatures of 4 and 37 C and were inconclusive in the remaining 8 children at the temperature of 4 C. The bone marrow did not represent in any of the 3 patients with positive serologic tests a "duality of proliferation," that is, the existence of hyperplasia of erythroid and lymphoid elements existing side by side, as observed by Rosenthal and co-workers in the United States. Enlargement of the spleen was noted in one patient in this series, which symptom is, according to some workers, evidence of the presence of autoantibodies in adult patients with leukemia. The authors believe that one cannot compare the hemolytic processes taking place in the course of leukemia among adults with those among children, because the underlying disease runs a very acute course in children but progresses more slowly in adults.

Right Heart Catheterization in Infants and Children: Analysis of Data Obtained in the Study of 218 Patients. B. W. Fink, A. J. Moss, F. H. Adams and B. J. O'Loughlin. J. Pediat. **53**:566-570 (Nov.) 1958 [St. Louis].

Catheterization of the right heart was performed on 218 infants and children at the Medical Center of the University of California at Los Angeles during the period from July, 1955, to March, 1957. The patients ranged in age from 1 day to 15 years. Eighty-five of the patients were under 2 years of age. All were hospitalized and observed for a minimum of 2 days prior to the catheterization study. Preoperative preparation usually consisted of penicillin prophylaxis and premedication with atropine and Demerol. Thiamylal (Surital) sodium was administered rectally in a dosage sufficient to maintain a basal state of anesthesia (33 mg. per kilogram). The catheterization was performed under fluoroscopic control with a Westinghouse image amplifier and with lead screening strategically positioned in order to offer the maximum protection to the operating personnel.

The pulmonary artery was entered in 73% and the left atrium in 38% of the studies. The procedure was found to be reasonably safe, even in small infants who are critically ill. Seventy-seven of the patients had lesions that were considered correctable by surgery. Assuming that the findings at surgery represented the correct anatomic diagnosis, the authors found that the clinical impression, based upon history, physical examination, roentgenography, and electrocardiography, was accurate 74% of the time. The additional information gained by cardiac catheterization increased the accuracy of the diagnosis by 17%, that is, to 91%. The authors believe that this procedure is an invaluable aid and that it should be utilized in selected cases regardless of the age or the physical condition of the patient.

Rheumatic Pneumonitis: Part II. Report on the Clinical and Laboratory Findings in 23 Patients. D. Goldring, M. R. Behrer, G. Brown and G. Elliott. J. Pediat. **53**:547-565 (Nov.) 1958 [St. Louis].

The authors present observations on 23 patients with rheumatic pneumonitis, whom they observed in the course of the past 8 years. The patients ranged in age from 4 to 14 years. Sixteen of the 23 patients died, and the diagnosis was verified by autopsy. Seven patients survived, and evidence is presented to show that this rheumatic manifestation can be diagnosed during life. The clinical course of each of the 23 patients was analyzed. Electrocardiograms and serial roentgenograms were studied when available. All patients were treated in essentially the same manner. Twelve patients in group 1 (nonsurvivors) and 3 in group 2 (survivors) were given aspirin on the basis of 0.14

Gm. per kilogram per day in 4 divided doses. Seven patients in group 1 and 5 in group 2 were treated with cortisone or Meticorten, and 1 patient was treated with corticotropin (ACTH). All patients received penicillin and streptomycin. All were digitalized with digitoxin (0.033 mg. per kilogram total dose; maintenance, 10% of total dose per day) and kept in oxygen tents. Morphine sulfate and Mercuhydrin were used when indicated. Blood and throat cultures were initially made in all patients.

The authors conclude that rheumatic pneumonitis is associated with the severe form of rheumatic fever and is a grave prognostic development. This rheumatic manifestation is a serious threat to survival, and those who survive are left with severe residual heart disease. There is a suggestion that hormone therapy may improve the chance of survival and possibly reduce the severity of the residual heart disease in the survivors. Although its efficacy is disappointing, the authors feel that hormone therapy should be included in the treatment of any child with severe rheumatic fever.

PATHOLOGY

Electron Microscopic Examinations of Renal Biopsy Material from Two Patients with So-Called Genuine Lipoid Nephrosis. O. Z. Dalgaard. Ugesk. læger **120**:1358-1363 (Oct. 9) 1958 (In Danish) [Copenhagen].

Renal biopsies from a girl aged 16 and a youth aged 17 with so-called genuine lipoid nephrosis were examined by electron microscopy and usual light microscopy. While light microscopy showed nothing abnormal in the glomeruli in one case and only slight thickening of the capillary walls in the other, electron microscopy revealed marked glomerulus changes in both cases. There was no organization of the epithelial cytoplasm into foot processes. Capillary loops were covered with a low epithelial cytoplasm. The epithelial cells were filled with vacuoles. In Bowman's capsular space formations were seen suggestive of detached foot processes. The basement membrane had a moth-eaten look in some places and nodular thickening in other places. There was an accumulation of material like basement membrane in the cytoplasm of the endothelial cells. The hyaline droplets in the cells of proximal tubules were converted mitochondria. In the second case biopsy after 15 days' treatment with ACTH, during which the proteinuria fell from 15 to 0.5 Gm. per 100 cc. daily, showed that epithelial cells in the glomeruli had become normal. The normalization of the cytoplasm after treatment with ACTH suggests that the immune-allergic reactions in so-called genuine lipoid nephrosis are localized especially to these cells.

ANESTHESIA

Collapse from Spinal Analgesia in Pregnancy. B. Williams. Anesthesia **13**:448-453 (Oct.) 1958 [London].

The susceptibility to spinal analgesia of patients undergoing cesarean section has been responsible in the past for serious or sometimes fatal collapse. There are 2 factors in pregnancy which predispose towards collapse from spinal analgesia. The first is an increase in the neurogenic tone which maintains blood pressure, a tone which is easily disturbed, and the second is the tendency towards hypotension and collapse which occurs in some patients in late pregnancy if they are kept lying on the back for any length of time. These factors should be taken into consideration. Patients showing any degree of postural hypotension should be considered unsuitable for spinal analgesia. In others, analgesia should be kept to the lowest possible level by limiting the dose of the drug, and by using a smaller dose than that used in nonpregnant patients to obtain the same level of analgesia. It is unnecessary for the analgesia to reach higher than the level of the umbilicus, and if a transverse incision is used it can be one or two segments lower. In keeping the level low the possibility must be faced of the analgesia being incomplete at the upper end or delayed in onset resulting in the need for supplementary local or general analgesia. Oxygen should be administered throughout. A careful watch must be kept on the circulation. Deaths must have occurred when a single-handed surgeon has administered the anesthetic and no one has been available to watch for the early signs of circulatory collapse. If hypotension occurs early, the patients' legs should be raised vertically, or, if at a later stage, the head of the table should be lowered.

Ventricular Fibrillation During Hypothermia: Further Observations. A. B. Kortz. Am. Surgeon **24**: 693-699 (Oct.) 1958 [Baltimore].

A technique of inducing hypothermia in the dog and performing a right ventriculotomy under conditions of inflow-outflow cardiac occlusion is described. This technique parallels that used in performing cardiotomy in human patients, and as such is recommended for investigative purposes. A method of arresting the heart and preventing ventricular fibrillation under the above conditions is described, using an intracoronary perfusion of Ambonestyl and Urecholine. Atropine sulfate is shown to be an effective antidote. Evidence is offered which suggests that a seasonal variation in success might be expected. The canine myocardium seems more irritable in the summer than in the winter. It is suggested that reports of investigations on ventricular fibrillation in the canine heart bear the dates during which such investigations were undertaken.

BOOK REVIEWS

Electrolyte Changes in Surgery. By Kathleen E. Roberts, M.D., Assistant Chief of Medicine, U. S. Public Health Service Hospital, San Francisco, Parker Vanamee, M.D., Assistant Attending Physician, Memorial Hospital for Cancer and Allied Diseases, New York, and J. William Poppell, M.D., Chief, Section of Cardio-Pulmonary Physiology, and Associate, Sloan-Kettering Institute for Cancer Research, New York. Publication number 317, American Lecture Series, monograph in Bannerstone division of American Lectures in Physiology. Edited by Robert F. Pitts, M.D., Ph.D., Professor of Physiology and Biophysics, Cornell University Medical College, New York. Cloth. $4.50. Pp. 113, with 21 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1958.

Although much of the usual material concerning water and electrolytes is presented in this monograph, emphasis has been placed on physiology pertaining to particular operations or anatomic segments. This is commendable. Of particular interest is the section entitled "Philosophy in the Diagnosis and Treatment of Electrolyte and Water Problems." The authors correctly state that strict rules cannot be followed because equilibrium in this field is a dynamic one; when one abnormality is corrected it may in turn produce another. Hence, the authors have stressed the entire electrolyte pattern in various diseases. They should be complimented on their statement that the most common electrolyte abnormality encountered in clinical medicine is the "laboratory error." The importance of clinical as well as laboratory data is emphasized. This book can be recommended to anybody interested in electrolyte changes in surgery.

A Study of Medical College Costs. By Augustus J. Carroll, Business Manager, Upstate Medical Center, State University of New York, Syracuse. Paper. $1.50. Pp. 188, with illustrations. Association of American Medical Colleges, 2530 Ridge Ave., Evanston, Ill., 1958.

An editorial in THE JOURNAL, Nov. 16, 1957, page 1459, pointed out that, while much has been said and written regarding the high costs of supporting medical schools, there is little awareness of the functions that these large expenditures make possible. Most often the expenses of supporting the complex activities of a medical school are interpreted as reflecting solely the costs of educating medical students. There is little understanding on the part of either the general public or the profession itself that many of the expensive undertakings of medical schools are not directed solely and often not primarily to undergraduate medical students. This study presents a detailed analysis and comparison of the fiscal operations of 19 medical schools and their teaching hospitals relative to such functions as undergraduate, graduate, and postgraduate medical instruction; the instruction of nonmedical students; research; and patient and community services. Although medical teaching centers have differing programs and varying methods of fiscal management, this report indicates that these differences can be understood, defined, and compared in detail.

This study identifies the funds expended with the function served. To a degree never before possible, university and medical school administrators can look forward to an understanding of and directed relationship between the order of importance of objectives assumed and sums assigned in support of those objectives. Extension of this study to include all United States medical schools and their teaching hospitals would make it possible to present to the American public accurate fiscal information about medical education. The general public is at once both the ultimate source of medical school funds and the ultimate benefactor of the activities these funds support. A better understanding of how medical education dollars are spent rather than merely where they are spent should make everyone more responsive to the needs of medical education. Medical educators could "learn not only how other medical colleges spend money, but how they save it." Through a grant from the W. K. Kellogg Foundation, this extended study will soon be initiated under the direction of the author.

Side Effects of Drugs: Untoward Effects of Drugs as Reported in the Medical Literature of the World During the Period 1956-1957. Compiled by L. Meyler, M.D. Paper. $5; Hfl. 19; £1.16. For Excerpta Medica subscribers: $3.50; Hfl. 13.50; £1.5.6. Pp. 194. Excerpta Medica Foundation, 111 Kalverstraat, Amsterdam-C, Netherlands; 2 E. 103rd St., New York 29, 1958.

The material in the second edition of this annual publication is presented in abstract form for each drug under its official or otherwise recognized nonproprietary (generic) designation, with synonyms, including trademarks, shown parenthetically. The drugs are arranged alphabetically according to nonproprietary name and organized into chapters according to their pharmacological or clinical

These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

classification. The references which are cited by annotations in the text are listed at the end of each chapter. A cumulative general index of the names, synonyms, and classes of drugs for which literature is cited, covering the previous and current editions of the publication, appears at the end of the book, with page references to the first edition in italics. This publication has been faithfully compiled and should serve as a valuable reference to previously reported drug reactions. To have called this book "Adverse Effects of Drugs" would more clearly have reflected the emphasis that is placed on untoward reactions. Although not useful as a source of information on newly encountered adverse effects of drugs, it should fulfill the need for a condensed and broad compilation that can be used in the interpretation of confirmatory and unreported observations in this area. The obvious preference for British nomenclature and spelling, including trademarks, is likely to lessen its appeal and engender some confusion in drug terminology for American users. The diction and printing are clear, although the distinction between the italicized and plain page numbers of the index might have been clarified by a difference in type size. Although the paper binding may detract from its permanence as a library reference work, this book should prove to be an excellent reference to published information on the subject.

The Ureterovesical Junction: The Theory of Extravesicalization of the Intravesical Ureter. By John A. Hutch, M.D., Clinical Instructor of Urology, University of California, San Francisco. Cloth. $7.50. Pp. 178, with 96 illustrations. University of California Press, Berkeley 4; Cambridge University Press, Bentley House, 200 Euston Rd., London, N. W. 1, England, 1958.

The title of this monograph is misleading because the material covered embraces much more than a classical discussion of the structure, function, and lesions of the ureterovesical junction. The author has assembled a clear, understandable concept of the cause and treatment of nonobstructive dilatation of the upper urinary tract and its associated phenomenon—reflux of urine. This is in contrast to most monographs on neurogenic changes of the lower urinary tract which contain a confusing compound of varying theories and concepts of cause, classification, and pathological changes. In part 1 the author deals exclusively with the spastic neurogenic bladder and explains why the patient who sustains a transection of the spinal cord may develop hydroureter, hydronephrosis, reflux, and uremia. He has studied a large number of paraplegic patients and, from this extensive experience, has developed the hypothesis of upper urinary tract dilatation. In part 2, the ideas developed in part 1 are used to explain the upper urinary tract dilatation and reflux occurring in conditions other than those associated with the spastic neurogenic bladder. This work is adequately illustrated, from both a diagnostic and therapeutic point of view. Hutch's ureterovesical plastic operation, by which he creates an intravesical ureter, is clearly described and preoperative and postoperative pyelograms are used to show the correction of reflux. This monograph can be read with great profit by all physicians called on to treat neurogenic or obstructive lesions of the urinary tract. Those most interested would be urologists, neurologists, pediatricians, and neurosurgeons. The work is a classic and the author is to be contgratulated on its excellence.

The Endocrinology of Reproduction. Edited by Joseph Thomas Velardo. Contributors: Frank D. Allan, Ph.D., and others. Cloth. $15. Pp. 340, with illustrations [by Robert C. Wabnitz]. Oxford University Press, Inc., 114 Fifth Ave., New York 11, 1958.

In attempting to present a relatively clear and useful summary of the available information and existing problems in the field of reproduction, the authors have succeeded remarkably well, despite the admitted complexity of the subject matter and the fact that research involving some aspects has been extremely fruitful during the past few decades. Among the topics covered in separate chapters are the genetics of reproduction, embryology of the reproductive system, pituitary and hypothalamus, mammary gland development and function, and the dynamics of endocrinology. The editor and authors have spent much time and effort in providing numerous references to support their conclusions and to provide source material for those who are interested in exploring certain problems in further detail. The material is well integrated and chapter delineation is good, despite inherent difficulties in achieving this when various authors contribute on similar subjects. One instance of divergent views relates to the number of pituitary gonadotrophic hormones, which seems to be clouded by reference to two in one chapter and to three in another. The book is well illustrated by both original drawings and reproductions from other sources, some in color. It is well prepared from the technical standpoint and shows excellent craftsmanship. One would hesitate to recommend this volume for the physician with only a superficial interest in the field of reproductive physiology, for it provides much more detail than he might be interested in having. On the other hand, for those specifically interested in problems of fertility this book should prove exceedingly informative, particularly in providing in one volume material that would require long and tedious hours of library research to accumulate.

QUESTIONS AND ANSWERS

MANAGEMENT OF THE NEWBORN BABY OF A DIABETIC MOTHER

To the Editor:—*In* The Journal, *June 14, 1958, page 923, there was a question and answer relating to the management of the newborn infant of a diabetic mother. It was stated that the four greatest dangers to such an infant were hypoglycemia, anoxia, lethargy, and prematurity. Although the literature on this subject is sparse, more recent work than that quoted would indicate that the greatest problems in such an infant are prematurity and its complications and a predisposition to severe respiratory distress. The problem of hypoglycemia has not proved to be as serious as it had been presumed. Dr. Jorgen Pedersen of Copenhagen, in his booklet "Diabetes and Pregnancy," reports a study of the blood sugar level in relation to the normal newborn infant. He found all newborn babies to have blood sugar levels lower than what is generally considered normal and newborn infants of diabetic mothers to have only a slightly lower level than other normal babies. He believed this problem to be clinically unimportant. This agrees with the report of Graham and Lowrey. They stated that, in a series of 11 such infants, hypoglycemia with levels below 20 mg. per 100 ml. was present in two but that none had clinical symptoms. They also cited White and other investigators who have given up the use of sugar in these babies. In the 13 babies I have seen at the Virginia Mason Clinic, there was no clinical evidence of hypoglycemia.*

This is an important point, since one is primarily dealing with a large, premature infant delivered four to six weeks early by induction or section. Such an infant has a tendency to develop severe respiratory distress within the first three days of life, generally of the "hyaline membrane syndrome" type. Early feeding is contraindicated. It has been the practice to withhold feedings for 24 to 72 hours; this is diametrically opposed to the procedure recommended by the consultant. There have been no complications at this clinic from this treatment, and only one death (from respiratory distress) has occurred. The subject should at least be kept open.

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The above comment was referred to the consultant who answered the original question, and his reply follows.—Ed.

Answer.—In the answer to the query, the study of Reis, De Costa, and Allweiss (Diabetes and Pregnancy, Springfield, Ill., Charles C Thomas, Publisher, 1952) was cited. In a reevaluation of the question of pregnancy in the diabetic woman, Reis, De Costa, and Gerbie (*Am. J. Obst. & Gynec.* **76:**1148, 1958) said:

> Although we have preferred prophylactic oral glucose feedings for the newborn, our present attitude is less rigid than heretofore. There remains a difference of opinion concerning such feedings, and it seems that those who advocate starvation for the first 24 to 48 hours achieve practically the same fetal salvage as do those who insist on routine feedings begun immediately after birth. It should be noted, however, that some groups are now feeding "sick" newborn infants of diabetic mothers promptly and continuously with glucose in saline solution. It may well be that our original recommendation still has merit. The most important principle in the care of the newborn of diabetic mothers is still found in the recommendations previously made that they must be treated as premature regardless of size, that special attention be given to predelivery analgesia and anesthesia, together with intubation, aspiration of the trachea, and postural drainage to prevent respiratory embarrassment. It is equally important to maintain body heat, avoid anoxia, and to continue constant stimulation of these babies during the first 48 hours of life.

Allweiss, an internist, stated in answer to the above letter that it is agreed that the subject of the management of the newborn infant of the diabetic mother should be kept open. Prematurity and its complications and predisposition to severe respiratory distress from the "hyaline membrane syndrome" are indeed of paramount importance. The questioner, however, directed his query to the hypoglycemic factor. The lowest blood sugar level of the infant from a diabetic mother occurs in the first hour of life and gradually rises. Attention has been called to the fact that no clinical symptoms are associated with the hypoglycemia. It is felt, however, that a blood sugar level below 20 mg.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

per 100 ml. may easily be treated in these infants by simple oral intake, provided there is no respiratory distress. Should there be respiratory distress, dextrose can be given subcutaneously. The reasons for treating the hypoglycemia are as follows: It may be a factor in neonatal death, even without clinical symptoms. It may be a factor in central nervous system damage in the child and adult. The damage to an infant is not known. Perhaps the nervous tissue in the young can withstand insult, for there are physicians who do not treat the baby with glucose and they report no immediate central nervous system damage. Since treatment of the hypoglycemia is so simple and may prevent central nervous system damage, which can now be detected, the use of glucose seems to be justified.

INDURATION OF CORPORA CAVERNOSA (PEYRONIE'S DISEASE)

To the Editor:—*A 54-year-old man was subjected to colostomy and rectal resection for carcinoma, grade 2, of the rectum, which had not penetrated the muscularis. No metastases were found in the blood vessels or lymph glands. After removal of the Foley catheter eight days after the operation, the patient complained of burning on urination for three or four weeks. Repeated urinanalyses gave negative results. Now, after one year, the patient complains that the penis, on erection, tends to arch downward in the shape of a bow. No indurations can be palpated. There is no evidence of stricture from his history, but no sounds have been passed. Please suggest diagnosis and treatment.* *M.D., Mississippi.*

Answer.—The available data would indicate that the patient is suffering from Peyronie's disease (fibrous cavernositis, plastic induration of the corpora cavernosa, fibrous sclerosis, fibrous plaque of penis). In this condition, for reasons unknown, a dense hyalinized connective tissue plaque develops between a fascial sheath of the penis (Buck's fascia) and the tunica albuginea surrounding the corpora cavernosa, resulting in painful or painless deviation of the erect organ. Two aspects in the above-described case are unusual, namely, the absence of a palpable plaque and chordee (ventral deviation of the erect penis). In the majority of instances of this disease, a plaque can be detected behind the coronal sulcus straddling the corpora cavernosa and deviation of the erect penis is dorsal, dorsolateral, or lateral. A plaque situated in the septum between the tunica albuginea, however, would not be palpable and would result in chordee; such cases have been reported infrequently. The onset of this condition after resection of the colon and the use of an indwelling urethral catheter would appear entirely fortuitous. For the sake of completeness, however, it would appear advisable to carry out urethral calibration and urethroscopy. It is conceivable that the traumatic passage of a urethral catheter, which is left indwelling, may result in periurethritis, urethral stricture, or both. Chordee as a result of these conditions, however, is extremely rare. Finally, metastasis from carcinoma of the colon to the penis, as a cause for chordee, occurs extremely infrequently and usually results in a palpable mass.

The etiology of Peyronie's disease is obscure, and consequently a variety of forms of treatment have been suggested. These include internal medication, roentgen therapy, radium therapy, steroid injections, diathermy, massage, hyaluronidase, electrolysis and ultraviolet radiation, and surgery. Only the first four forms of therapy have been used widely, and in this particular case it would appear that only the first two are applicable. The oral administration of alpha tocopherol, 100 mg. three times daily for a period of six to eight months, is suggested. Roentgen therapy with moderate doses should be given. The use of radium is losing acceptance because of the inability to protect the gonads adequately in spite of shielding. The inability to define a plaque would contraindicate multiple injections with cortisone. The consensus is that relief of chordee by any method of treatment occurs in approximately 30% of cases.

HYPERTHYROIDISM IN INFANTS AT BIRTH

To the Editor:—*In 1954, a woman developed amenorrhea which persisted for about six months. The basal metabolic rate at that time was –20% and protein-bound iodine level 2.8 mg.%. She was started on therapy with 1 grain (60 mg.) of thyroid. Her menstrual periods returned and her basal metabolic rate increased to –8%. She had what was felt to be a simple goiter, because of a diffuse boggy enlargement of the thyroid. She became pregnant, and the thyroid dosage was increased to 2 grains (120 mg.) daily and she was given strong iodine solution, 20 minims, throughout her pregnancy. A full-term baby was born with a tremendously enlarged thyroid, completely occluding the larynx. The baby smothered. It was impossible to pass a tube into the baby's larynx because of the large thyroid. Histological examination of the thyroid showed follicles which contained no colloid and which were lined by tall epithelial cells. There was no evidence of malignancy. The patient was then placed on therapy with 2 grains of thyroid daily.*

She again became pregnant, with her expected date of confinement 16 months after the previous delivery. At that time she was given thyroid until hyperthyroid levels were reached; the thyroid dosage was then decreased to 5 grains (300 mg.) daily. She was also given strong iodine solution, 30 minims daily. The thyroid therapy was started at the second month of gestation.

When the mother reached term, again the baby was born with an enlarged thyroid, but not nearly as large as that of the first baby. From the onset the baby was fussy and had a temperature of 100 F (37.7 C), a terrific appetite, rapid pulse rate, and loose stools. Because of the history, it was felt that the baby was most likely in a hyperthyroid state and she was given 1 minim of strong iodine solution three times a day. When the baby was two months old, a butanol extractable iodine test gave a finding of 6.8%, indicating moderate hyperactivity of the thyroid gland. The baby is now 13 months old and has developed normally but still has a markedly enlarged thyroid gland. She is taking 6 minims of strong iodine solution daily.

On Nov. 25, 1957, the mother again became pregnant; a similar course of therapy was followed during this pregnancy. Late in pregnancy, she developed a severe stomatitis and dermatitis which disappeared after the strong iodine solution was withdrawn. Her first visit with this pregnancy was on Feb. 28, 1958, and, from her last period on Nov. 25, 1957, her thyroid dosage was just 2 grains daily. On Sept. 20, she delivered a baby girl normal in weight and size. Again, the baby had a tremendously enlarged thyroid and showed symptoms of hyperactive thyroid. Therapy with strong iodine solution was again initiated, but the baby could not tolerate more than 1 drop of iodine daily. She has a tremendous appetite and is being breast fed, whereas the other baby was fed by bottle.

In view of the thyroid difficulties this patient seems to have and the scarcity of material in the literature covering such a case, please suggest what might be done to care for these two hyperthyroid infants. Should radiation or radioactive iodine therapy be considered? What therapy should be given to the mother in the event she again becomes pregnant? She had had two normal pregnancies before the thyroid condition began. When she is not pregnant she has a tremendously enlarged thyroid gland and requires 2 grains of thyroid daily for maintenance. During her pregnancy, presumedly because of the thyroid activity of the baby, her thyroid gland becomes nonpalpable. This is despite the fact that she is taking enough thyroid to produce hyperthyroid symptoms during her pregnancy. Should the mother have a thyroidectomy?

M.D., Montana.

ANSWER.—Hyperthyroidism in infants and children is an unusual condition. There is essentially no literature concerning hyperthyroidism in newborn infants. The patient in question here has undoubtedly given birth on three consecutive pregnancies to infants exhibiting well-established hyperthyroidism at the time of delivery. She, herself, has treated hypothyroidism. With respect to the mother, both currently and in the event of future pregnancies, the combined therapy with both thyroid and strong iodine solution would suggest little advantage over thyroid alone. Indeed, the addition of regular daily doses of iodide could only serve to aggravate the intrauterine hyperthyroidism of the fetus. Somewhere after the 14th or 15th week of pregnancy, the placental barrier to transmission of iodide begins to diminish. As in severe hyperthyroidism in the older patient, one must assume that the effect of iodide on the fetal hyperfunctioning thyroid can only be one of temporary suppression with eventual "breakthrough" and aggravation by supplying the necessary iodide substrate. By contrast, treating the mother with thyroid in a meticulous fashion to the point of euthyroidism or even very mild hyperthyroidism, as was established in the last pregnancy, would serve the function of limiting the maternal influence to one of suppressing the fetal thyroid. Replacement therapy with strong iodine solution should have corrected the mother's condition if this were due to iodine deficiency. Thyroidectomy should have no bearing on the subsequent course of either the mother's thyroid state or future pregnancies. Adequate therapy with thyroid alone for the mother is suggested.

With respect to the infants, the treatment of hyperthyroidism here presents all the problems of juvenile hyperthyroidism in an exaggerated fashion. In this most active growth period the detriment due to overactivity of the thyroid must be corrected, but at the same time the institution by any therapy of life-long myxedema must also be avoided. Disturbance of thyroid function in either direction in very young children is a far more serious state of affairs than generally appreciated. There is, of course, no absolute contraindication to either surgery or radioactive iodine therapy in such conditions, but these should be the last and most desperate measures undertaken in the infant. Again, strong iodine solution as a therapy could hardly be expected to result in anything but mild hyperfunction. The use of medical therapy in the form of antithyroid drugs for as long as possible would seem to be the most promising answer here. The goitrogens that include organic iodide as part of their structure (e. g., 2-mercaptoimidazole) would afford the opportunity of regulating thyroid function at a normal level and at the same time prevent the appearance or progression of a goiter. While radioiodine uptake, blood levels of protein-bound iodide and cholesterol, and basal metabolic rate may all prove useful, the criteria of normality at this age are probably unreliable. The absence of general symptomatology and a steady progression of growth should be the most reliable indexes of adequate thyroid suppression. In all likelihood, the dosage of antithyroid drug will have to be continually checked and adjusted as growth of the

patient occurs. It is suggested that all therapy be interrupted at intervals of one year or 18 months to see whether the underlying condition has not disappeared. A sizable proportion of older patients with hyperthyroidism experience complete or long-term remission after a prolonged period of strict medical therapy. Again, one cannot predict what will happen for these unusual patients, but they should be afforded the opportunity of demonstrating any such possible remission at yearly or bi-yearly intervals.

HYPERSENSITIVENESS OF THE INTESTINE TO EMOTION

To the Editor:—*In most patients, the syndrome of "spastic colitis" or "nervous indigestion" seems to subside or, at least, the patients acquire control of it. However, in a 54-year-old patient there may be a familial tendency to hyperperistalsis, since the father and several brothers and sisters had the symptoms of spastic colitis. For 25 years, the patient has been progressively restricted in his diet. At first a few foods caused abdominal distress, audible peristalsis, and constipation, the worst flare-ups coming with periods of stress. While on vacations, however, the patient could eat everything. This is no longer true, and now there is a feeding problem. In the last 10 years, the patient has become sensitive to small amounts of listed foods. At first he could cut down on popcorn to one handful, pickles to one, and similar foods to small amounts and get by. Lately, however, some important foods, such as lettuce, bananas, and oranges, have been added to the list. He can still drink orange juice, but after a well-chewed orange is swallowed the pulp is passed visible in the stool practically unchanged in 18 to 24 hours. Antispasmodics have never helped; in fact, he has low tolerance for all of them.*

X-rays of the colon have been done three times in the last 15 years, and each time a large, normal, well-filled colon without spasm anywhere was noted. Several sigmoidoscopies have also shown negative findings. The patient is interested in physical fitness and exercises to keep ready for hard vacations. Although fats and starches seem to improve the condition, they cause him to gain weight rapidly. Could a gradually acquired deficiency of digestive enzymes cause the progression of these symptoms?

Frank C. Green, M.D., Chillicothe, Ill.

Answer.—This case report suggests a typical hypersensitiveness of the intestine to emotion. The most significant statement, "While on vacation the patient could eat everything," rules out food allergy. The long duration of the symptoms tends to rule out organic disease of the intestine. It is doubtful that the trouble of such patients is really spasm in the colon. In nervous persons, the descending colon always looks contracted, so that does not mean anything. At the Mayo Clinic, roentgenologists do not mention colonic spasm from one 10-years' end to another. Interestingly, it is stated in this case that x-ray studies show no colonic spasm and antispasmodic agents do not help. This was learned 40 years ago, and this consultant never uses such drugs. The fact that the patient tends to gain weight and now has to cut down on his diet shows that his absorptive and metabolic processes are excellent—in fact, too good. He cannot then have any deficiency in his digestive enzymes.

In hundreds of similar cases, the patient will get along comfortably with his intestine (the trouble is not limited to it) for a week, and then when, perhaps, he has to go out to dinner with friends, has to entertain guests in his home, or, in the case of physicians, has to give a paper at the county medical society he bloats with gas. In many cases, this is the essential beginning symptom. If the gas cannot quickly be passed, for reasons of politeness, it causes hyperperistalsis, and with this there keeps coming more gas with a little water and mucus that must be voided every 20 minutes if the person is to stay comfortable. Many young men and women have most of their trouble of this type when they are sexually excited and perhaps have had coitus. The storm in the pelvic nerves spreads to the colon. In these cases, a diet is never prescribed, because the trouble is due not to food and indigestion but to emotion. Many persons, if they are going to be under heavy strain, should take ½ grain (0.03 Gm.) of codeine before they go out for the evening. Even this amount will often stop the formation of gas and mucus and will let the person be comfortable.

Many persons ask, "Where does the gas come from?" It is excreted from the blood into the lumen of the intestine. In health, the gas moves out of the intestine into the blood and is excreted by the lungs. This is why the normal person rarely has any flatus. The inquirer is referred to the chapter on flatulence in the book by Alvarez, "An Introduction to Gastroenterology" (New York, Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers, 1948).

IDIOPATHIC SPASMODIC TORTICOLLIS

To the Editor:—*A 40-year-old woman complains of what appears to be a tic of the cervical portion of the latissimus dorsi and related cervical groups. The head nodding is up and down, with coarse movements markedly accentuated as to frequency and amplitude when the patient is self-conscious. This condition occurs about once daily and lasts for several hours. At the age of 17 this patient contracted syphilis. She was under competent neurological care until five years ago, when her neurologist died. She had a thyroid-*

ectomy five years ago, after which she developed tetany. In the past 10 years, she has had numerous somatic complaints and, in general, sedatives have been of some help. She has had some difficulties with her husband in the psychosexual sphere. She was treated by a competent analyst for two years, during which time chlorpromazine therapy was used.

Examination revealed slight hypertrophic arthritis of cervical vertebrae; low estrogenic effect reported on vaginal smear; pupils accommodated but not responsive to light; blood and spinal fluid Kahn test, negative; colloidal gold test, 0000000000; spinal fluid cell count, 12 per cubic millimeter; protein level, 1+; and sugar level, 70 mg.%. Over a period of years, the patient has received amobarbital ventilation, chlorpromazine, estrogens, diphenylhydantoin, calcium gluconate, ethopropazine, mephenesin, and reserpine. She had galvanic therapy and large doses of vitamin B_{12}. For a short time a plastic collar was used in an attempt to rest the cervical muscles. All these efforts have been to no avail. The patient still has her tic, and cervical traction has been considered. Please give advice as to therapy.

Milton Vainder, M.D., Chicago.

ANSWER.—The history and findings in this case indicate a diagnosis of psychoneurosis, psychasthenic type, with tic of the head, and central nervous system syphilis, with the only clinical finding of loss of pupillary reaction. The described movements of the head are seen most frequently in psychasthenia with compulsive tic. The fact that the tremor is "up and down" and that it appears worse when she is embarrassed would stamp this as an "acting out" of a defense mechanism. There are no other evidences of neurological disease except for the pupillary reaction. Syphilis itself would not produce the tremor of the head without other symptoms or signs. The hypertrophic arthritis in the cervical vertebrae aggravates the preexisting tic.

Mechanical or physical therapy should not be used, since the tendency would be to "fix" the tremor. It appears that the patient is using her tic as a defense to an already intolerable situation, i. e., the psychosexual difficulty with her husband. Concentration on mechanical therapy aimed to improve the tic will lead to a more persistent habit spasm. The best therapy would be psychotherapy. The patient will need to accept her tremor until the underlying problem is solved. Explanation and suggestion should be attempted. Good sedative medication and tranquilizers will be helpful in decreasing her tremor but will not "cure" the present problem. It will be helpful to see the patient's husband to try to get at the base of the conflict, and this will be useful in treating the patient—and perhaps the husband. The fact that the patient has had this condition for many years, has many somatic complaints, and has used many types of therapy would indicate the severity of the neurotic pattern. Also, the fact that the tic becomes more pronounced in the face of embarrassment and without neurological disorder (such as Parkinson's disease) would also be an indication of psychoneurosis.

ANSWER.—From the description given, this condition best fits the category of idiopathic spasmodic torticollis. This relatively rare disorder occurs usually in females in the fourth or fifth decade and is characterized by sustained contractions of the neck muscles, either tonic or clonic, in varying degrees. The clonic activity may be an irregular tic. It may be either unilateral or bilateral, sometimes with head nodding. It is absent during sleep. Pain may develop in severe cases. Electromyographic findings may correspond to dystonic movements. The condition may remain unchanged or may become worse, and improvement is rare. Spontaneous remissions occur in few patients. It is the opinion of some neurologists that this condition is due to extrapyramidal disease, but postmortem evidence is scarce and pharmacological aids are usually of no avail. These movements are aggravated during periods of stress for the patient. They need not interfere with work or the capacity of the patient to function in society, but withdrawal from occupational and social life is common. It is possible that further effort to help this patient understand her drives and motivations, as well as attempts to modify the environmental setting of her difficulties, may alleviate her symptoms. The emotional support of a physician may help. It is not advisable to section nerves or use traction or other mechanical manipulative procedures.

EXERCISE AFTER CORONARY OCCLUSION

TO THE EDITOR:—*A patient, aged 51, completely recovered from a first coronary occlusion with no congestive heart failure, no angina, normal blood pressure, no arrhythmia, and no other complications. May such a patient take mild exercise? If so, how soon may he exercise after the occlusion? Besides walking, would mild calisthenics and bending and stretching exercises be permitted? What about dancing and climbing stairs?*

M.D., Pennsylvania.

ANSWER.—This consultant permits his patients to begin moderate physical activity two to three months after a good recovery from uncomplicated coronary occlusion. Mild exercise, such as walking, playing golf, and perhaps even climbing slowly is not only permitted but actually encouraged. Participation in any activity, be it mild calisthenics, walking, or swimming, must be approached gradually; reasonable increases from week to week must be dependent on the tolerance of each patient, and no exercise must be allowed to produce fatigue or

other symptoms. With these precautions in mind, calisthenics that require slow and simple movements, walking, and moderate swimming are all good forms of exercise. Dancing and climbing stairs are merely different forms of exercise and, provided they do not produce angina, shortness of breath, or similar symptoms, may be performed perfectly safely.

ANSWER.—It has been suggested on the basis of limited epidemiologic and experimental studies that physical activity may retard atherogenesis and lead to clinical manifestations which are less severe than in comparable sedentary subjects. The validity of the epidemiologic evidence has recently been seriously questioned by investigators of parameters not previously explored in this regard. Experimental data is scanty and inconclusive. The problem relating to the patient described must, therefore, be resolved on the basis of clinical judgment and common sense. When a patient has made a complete recovery from a myocardial infarct, there is no objection to resumption of physical activities incident to every day living, provided such exertion leads to no symptoms, such as angina or dyspnea. Walking, limited stair-climbing at a sensible rate, and slow ballroom dancing fall into such an acceptable category. Golf is ordinarily a permissible sport. It is doubtful whether it is ever advisable to suggest a program of calisthenics or "body building" to a sedentary person who has not been in the habit of engaging in such activities prior to the appearance of clinical coronary artery heart disease.

MOUTH BREATHING

TO THE EDITOR:—*A man, aged 65 years, has had the following complaints increasing in intensity for over six years. He states that after approximately one hour's sleep he is awakened by a foul taste in the mouth and his tongue becomes rough and "stiff as a board." The disturbance disappears when he sits up for about 10 minutes. This continues several times during the night, with headaches and fatigue. He also feels a "lump" in the mouth "moving in different directions," with the face stiff and numb. His history shows that he has had asthma intermittently since 1927. Please give suggestions on diagnosis and treatment.*

Arthur M. Parker, M.D., Brooklyn, N. Y.

ANSWER.—This patient apparently suffers from mouth breathing, probably induced at least in part by allergic rhinitis with polyposis. Mouth breathing, especially during sleep, is apt to cause dryness of the mouth and tongue. After waking and sitting up the patient probably reverts to nasal breathing, and after the tongue becomes moist again he is able to go back to sleep. The impact of this disturbance on the patient is likely to be intensified by introspection and anxiety engendered by failure of medical treatment to give relief. The recommended treatment includes explanation to the patient of the probable mechanism of his distress, treatment of allergic rhinitis and polyposis by his otolaryngologist, and, for temporary relief and as a therapeutic test, the use of nose drops with naphazoline hydrochloride at bedtime and, if necessary, during the night.

ROUTINE PRENATAL BLOOD GROUP DETERMINATIONS

TO THE EDITOR:—*A mother, 25 years of age, with two children, has recently delivered a third baby. On the third day after delivery, the baby developed severe jaundice and the serum bilirubin level was 26 mg.%. There was a severe ABO incompatibility, the mother belonging to group O and the baby to group A. Existence of incompatibility was not suspected during pregnancy. In spite of two exchange transfusions, the baby developed massive thrombosis and sepsis and died on the 14th day. The first baby (from another husband) had no difficulties after delivery; he is alive and well. 1. What are the chances for future pregnancies in this case? 2. Is it permissible to do exchange transfusion through the umbilical vessels on the third day? Are they not partly thrombosed by that time? 3. Would it be advisable to require routine Rh factor and ABO group determinations from both prospective parents during premarital, or at least prenatal, examinations, so that such an occurrence would not happen by surprise?*

Eugene Hoffmann, M.D., Brooklyn, N. Y.

ANSWER.—In the case outlined, the death of the infant after two exchange transfusions from massive thrombosis and sepsis on the 14th day cannot be attributed directly to the ill-effects of blood-group incompatibility. Ordinarily, exchange transfusion therapy, particularly if given early and if successful in controlling hyperbilirubinemia, produces entirely satisfactory results in ABO incompatibility, as it does in cases due to Rh or other blood-group incompatibility. 1. The chances for future pregnancies in ABO incompatibility are good. In contrast to Rh incompatibility (and some of the rarer types, such as **Kell, Duffy,** and others), ABO incompatibility does not tend to recur in the more severe form. In addition, it does not cause late stillbirth, which is one of the disastrous results of Rh antibodies. 2. It is not only permissible but relatively easy to use the umbilical vein for repeat exchange transfusions or even for a first exchange transfusion on the third day or later. The umbilical vein has been successfully canalized as late as the sixth day, when it

seemed to be occluded by a soft clot. Gentle suction after the vein has been exposed by undercutting the umbilicus or the remainder of the cord usually removes the soft clot. Subsequent threading of the vein by the catheter is not difficult. It must be emphasized that the catheter should not be pushed against apparent obstruction in order to avoid injury to the vessel wall or detachment of a possible clot. 3. Although ABO group and Rh factor determinations as a premarital routine have been proposed, this was considered to be an impractical procedure because so many tests would be done unnecessarily (e. g., with no subsequent pregnancy) and couples might be unduly alarmed at blood group differences which actually play a relatively minor statistical role in the incidence of erythroblastosis fetalis (about 5% of infants born to such couples). On the other hand, prenatal determinations of Rh factor and ABO groups are standard procedure in almost all large obstetric services and are very much worth while. Where the record of the woman at delivery fails to give the blood groups of her husband and herself and erythroblastosis is therefore not anticipated, it is especially desirable that the baby be watched carefully for the first 48 hours for the occurrence of jaundice, which at this early time is most commonly due to erythroblastosis. The recent article by Allen (*New England J. Med.* **258**:1302, 1958) suggests a routine for services for newborn children that is particularly pertinent to this discussion. Certainly, earlier exchange transfusion is desirable when jaundice appears and reaches a dangerous level, whether this be within the first day or two or even later, as is so often seen in premature babies.

HEREDITY AND PERONEAL ATROPHY

To the Editor:—*In 1946, a patient was given a diagnosis of progressive neuropathic muscular atrophy (Charcot-Marie-Tooth disease). This patient's mother is confined to wheel chair bed, presenting typical advanced deformities of the joints of the ankles and legs as is described in this disease. Recently, another member of this family, a brother, requested an opinion regarding ligation of the vasa deferens for himself to avoid having a second child. His reasons included increasing muscle weakness and fatigability and his knowledge of being unable to perform the physical activities that he used to do a few years ago. Does this condition justify the avoidance of children, even if a member of the diseased family marries a member of a healthy family?*

J. A. Miranda Vargas, M.D., Pittsfield, Ill.

Answer.—Basically, the problem is whether sterilization is justified in an instance of a hereditary neurological disease, in this case, peroneal muscular atrophy. This disease actually has many different types of inheritance: dominant, simple recessive, and sex-linked recessive. With this family, it is somewhat difficult to ascertain the genetic factor but it could be either dominant or sex-linked recessive. The chances of inheritance are, therefore, difficult to predict, particularly since a member of a diseased family has married into a healthy family. There are many factors involved, and the more or less constant anxiety and tension about whether a child would develop the disease is not the least important. However, in view of the relative unpredictability of the situation, it is not believed that it would be really justified to recommend sterilization.

Answer.—Peroneal atrophy, described independently by Charcot and Marie in Paris and by Tooth in London in 1886, is one of the most clearly and definitely inherited defects. Like most such pathological traits, it is inherited in different ways in different families but most frequently as a dominant inheritance; the very fragmentary pedigree submitted suggests such a mode. If so, the patient seeking vasectomy can expect that half of his children will be affected—in other words, the chance of any of his children being affected is 50-50. Desirability of preventing reproduction depends on a variety of considerations, but, since the defect is a serious one and he already has one child, there is certainly a good case in favor of vasectomy.

FOLLOW-UP STUDIES ON POSITIVE SEROLOGIC FINDINGS

To the Editor:—*A 20-year-old woman was found to have a Venereal Disease Research Laboratory test reaction positive at 16 dilutions. She was nonreactive to the Treponema pallidum immobilization test. As this is an unusually high titer for a biological false-positive result, what should this patient, who was recently married, be advised about further treatment? She denies previous contact, and the family history is negative.*

M.D., Wyoming.

Answer.—Presuming that the physical examination and history, including that of parents and siblings (congenital syphilis), reveals no evidence of syphilitic infection and that the marital partner or other sex contact shows negative findings, proper management of this patient would be observation and follow-up serologic tests for at least three to four months. If the Venereal Disease Research Laboratory test continues to show positive reactions, a spinal fluid evaluation (cell count, protein level determination, and complement fixation test) and a repeated Treponema pallidum immobilization test should be performed. Decision as to further management should be based on findings at that time. If treatment has been or is being given, follow-up

studies must be as for a syphilitic diagnosis. A minimum of 4,800,000 units of penicillin would be considered adequate, and no further treatment would be indicated. The finding of a reaction in the Venereal Disease Research Laboratory test at a high titer and no reaction to the Treponema pallidum immobilization test in the presence of syphilis is rare, but it can occur. For example, in early syphilis, as a rule, the former becomes reactive before the latter. Also, treatment might have been given prior to the development of treponema antibodies, and the Venereal Disease Research Laboratory test might continue to show positive reactions for a period of time. For the patient's benefit, a reactive reagin test should be considered as due to syphilis until thorough initial and follow-up examinations have ruled out such a diagnosis. The importance of follow-up study in patients with chronic biological false-positive results must also be considered in light of the development of collagen diseases and other conditions in some of these patients.

TERMINAL STERILIZATION OF INFANT FORMULA

To the Editor:—*In the terminal sterilization method of preparing infant formula, 25 minutes should be allowed for sterilization when there is no steam pressure. How may this time be reduced by use of a pressure cooker at 5, 10, 15, or 20 p. s. i.? While this is probably insignificant, the elevation here is 1,200-1,300 ft.*

Carl E. Graner Jr., M.D., Oklahoma City.

Answer.—Reference to the American Hospital Association's publications on terminal sterilization might be helpful in seeking information on this subject. Infant formulas have been successfully sterilized with pressures of 7 p. s. i. (pressures in the electric cookers are between 5 and 20 p. s. i.) for a period of 10 minutes. If pressure cookers are utilized, crucial cut nipples are recommended because there is less tendency for clogging of the nipples by the solidification of the lactalbumin in the milk. The terminal sterilization of infant formulas within the home by pressure cookers is not recommended because of the tendency to clog the nipples.

ETHYLENE OXIDE STERILIZATION

To the Editor:—*What is the current status of ethylene oxide sterilization, with particular reference to conversion of a large hospital sterilizer to this technique for routine use and to adaptability to office use? No references to its efficiency for inactivation of viruses, such as that of hepatitis, have been found.* *M.D., New Mexico.*

Answer.—There is presently no evidence that ethylene oxide or other chemicals destroy the viruses that are responsible for hepatitis infections. Exposure to heat is currently the only safe procedure.

STOCK AND CAPITAL ASSETS OF GROUP PRACTICE

To the Editor:—*How do various clinics throughout the United States handle stock held by the partners in the building corporation? Is the stock sold to new partners at par value, at book value, or on an independent appraisal figure? On what basis is the stock bought and sold between retiring partners or partners who leave the clinic for other reasons?* *M.D., Wisconsin.*

Answer.—One of the difficult problems faced by group practice in the early days was that of handling fixed capital assets, such as the building, land, and equipment, in a partnership where the individual percentages varied from time to time. This was solved by having two legal entities instead of one—one the operating partnership and the other a corporation to own the fixed assets, with the stock of the corporation held by the physicians in the partnership. Thus, they could keep ownership values straight. The corporation was the landlord, and the partnership the tenant. A new partner could be added without requiring an immediate investment on his part. The problem then became one of establishing a fair price in case of subsequent stock transfers. Some groups set this at par values, others worked out a graduated upward scale pulled out of thin air, while others decided such sales should be based on book value. Since none of these plans contemplated outside economic changes over which they had no control, such as the inflation of the dollar and a shift in city growth, it was only a matter of time for the price so pegged not to represent the true value of the stock. Then they were in trouble again.

There are other groups that feel their stock in the building corporation should be like any other stock investment. It should carry the possibility for gain or loss. This can only be determined to any degree of accuracy by securing an outside appraisal of the corporation's assets and liabilities. Since with such a stock there is little turnover in sales, members usually arrange to have such an appraisal made, for instance, every three to five years, and in the meantime the price of the stock is pegged at its last-appraised value. This is the best plan so far developed. It is fair to all concerned. In order to keep the ownership of the building in interested hands, most groups have a stipulation that, if any stockholder for any reason wishes to sell any or all of his stock, the other stockholders shall be given an option of purchase (usually 60 to 90 days) before the stock is offered to outsiders. In case of death of any stockholder, the executor of his estate must do likewise. If a partner should leave the partnership for any reason the remaining stockholders shall have the right to purchase his stock at the price as it is then pegged. Some groups, however, feel an exception should be made when the partner retires. They feel it is to their advantage to have him retain an interest in the clinic, so they permit him to retain his stock should he so wish.